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CABLE-INSTRUCTIONAL TV AND S. 1200
COMMUNICATIONS COMPETITIVENESS
AND INFRASTRUCTURE MODERNIZA-
TION ACT OF 1991

P22-9

HEARING
BEFORE THE
SUBCOMMITTEE ON COMMUNICATIONS
OF THE
COMMITTEE ON COMMERCE,
SCIENCE, AND TRANSPORTATION
UNITED STATES SENATE
ONE HUNDRED SECOND CONGRESS
SECOND SESSION

FEBRUARY 28, 1992

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CABLE-INSTRUCTIONAL TV AND S. 1200 COMMUNICATIONS COMPETITIVENESS AND INFRASTRUCTURE MODERNIZATION ACT OF 1991

FRIDAY, FEBRUARY 28, 1992

U.S. SENATE,
SUBCOMMITTEE ON COMMUNICATIONS OF THE
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m. in room SR-253, Russell Senate Office Building, Hon. Daniel K. Inouye (chairman of the subcommittee) presiding.

Staff members assigned to this hearing: John D. Windhausen, Jr., staff counsel, and Antoinette D. Cook, senior counsel; and Regina M. Keeney, minority senior staff counsel, and Mary P. McManus, minority staff counsel.

OPENING STATEMENT OF SENATOR INOUE

Senator INOUE. This morning's hearing will consider two very important topics. First, access to educational programs via cable, and after that, our telecommunications infrastructure.

This committee will consider how well telecommunications systems can improve our quality of life, our ability to compete in the international marketplace, and our respect and appreciation for the wide diversity of values and cultures around the world. I will have more to say concerning the communications infrastructure later this morning.

The first hearing will explore the question of the role of the cable industry in furthering education. Senator Bingaman has a proposal which seeks to require cable operators to devote certain channels to instructional television programming.

When Senator Bingaman first raised this issue during the floor debate on S. 12, the cable bill, I noted that the proposal had merit and should be explored further by this subcommittee. And so I am pleased that we have this opportunity to continue Senator Bingaman's proposal this morning in more detail.

As the committee ponders this proposal, I believe that we must consider the context. First of all, there's no doubt that the quality of American education is of critical concern. Of the major developed countries considered in recent surveys, American students ranked only 14th in mathematics and 13th in science. The recent Department of Education study concluded that the vast majority of American students performed below the international average.

We must also keep in mind that current law in S. 12, the Cable Television Consumer Protection Act recently approved by the Senate, imposes channel obligations on cable, on cable operators to make channel capacity available to local governments and public broadcast stations.

Under the 1984 Cable Act, cable operators can be required by local franchising authorities to provide public educational and governmental access channels. Many cities require cable operators to provide up to five such channels, some of which are used for instructional programming.

In addition, S. 12 would require cable operators to carry up to three public broadcast stations. Many public stations carry significant amounts of educational TV programming today. Many public broadcast stations provide instructional programming to viewers in their home, and to students in schools and universities.

Senator Bingaman's proposal, therefore, must be evaluated in relation to the cable operator's existing channel obligations and the availability of educational programming in the market.

I would also like to note that I believe the issue of education in telecommunications is much broader than cable TV, and intend for the subcommittee to examine this for a series of hearings later this year. But this morning's hearing gives us an opportunity to begin this process by examining the proposal offered by Senator Bingaman, and to hear from a distinguished panel of educators and experts in the field of telecommunications.

Now a word from the chairman, Senator Hollings.

OPENING STATEMENT OF SENATOR HOLLINGS

The CHAIRMAN. Some say that the telecommunications network is the cornerstone of our industrial competitiveness and the bedrock of our liberties. An open, accessible, low-cost, flexible, and sophisticated public telephone network could become a necessity of life in the 21st century. Thus, the decisions we take today regarding the telecommunications infrastructure will help to shape the future economic, social, and political history of this country.

Today's hearing could not be more timely. America's educational system is in decline, and our children are failing to make the grade. If television is part of the problem, then perhaps television also can be part of the solution.

In this context, Senator Bingaman's proposal to set-aside certain cable channels for instructional television should be given serious consideration. While television cannot substitute for the classroom, instructional television could prove to be an invaluable supplement. Instructional programming could provide courses that are not available in some schools, could help uneducated adults to further their education, and could help teachers to learn new subjects. While Senator Bingaman's proposal must be considered along with the other requirements imposed on cable operators to reserve channels for certain purposes, his proposal certainly deserves further scrutiny.

The questions surrounding S. 1200 are also complex. The committee has debated the contentious issue of whether to lift the cable telephone restriction several times in the past. I always have had concerns about letting those who control the conduit also con-

trol the content of the message. I believe that the committee has a responsibility to review these issues, and I look forward to hearing the testimony this morning.

Thank you.

Senator INOUE. Thank you, Mr. Chairman. I look forward to the testimony of all of you this morning. And now I wish to turn to the distinguished author of this measure. Senator Bingaman, welcome.

**STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM
NEW MEXICO**

Senator BINGAMAN. Thank you very much, Mr. Chairman. I will make my presentation brief, because you have a long list of very distinguished witnesses scheduled this morning.

Let me first of all thank you for your willingness to let me testify on this and bring attention to this. I know it is an issue that you are greatly concerned about, as all of us are.

My concern is that the technology, I think, is clearly providing tremendous new opportunities for us. And I fear that we are not taking the steps that should be taken to take advantage of those opportunities.

There is a quotation that I just wanted to start with. E.B. White, who is one of our distinguished writers in this country, wrote in 1938, after seeing a demonstration of television—he said, “I believe television is going to be the test of the modern world. And that in this new opportunity to see beyond the range of our vision, we shall discover either a new and unbearable disturbance of the general peace, or a saving radiance in the sky. We shall stand or fall by television. Of that I am quite sure.”

Mr. Chairman, I am persuaded that E.B. White was correct, and that in fact television is having dramatic impacts on our society, on our children, on our educational system. And we have ignored those impacts way too long. I think the opportunity to use the technology for a more beneficial purpose is there.

And I wanted to just cite three areas in which I think this great technological opportunity can be focused. One is preschool education and instruction for children. The new report that Ernest Boyer has authored, with the Carnegie Foundation for Advancement of Teaching, called “Ready to Learn”—I am not sure if you have had a chance to review it yet—but it is a report that was done as part of the effort for national education goals.

The first goal that the Governors and the President talked about, ensuring that all of our children would be ready to learn by the time they start school, this report is an effort to put some meat on those bones and put some substance into it, and some thought into recommendations.

One of the recommendations is of particular interest to this committee, and it relates to television. It says that a ready-to-learn cable channel should be established, working collaboratively with public television, to offer programming aimed exclusively at the educational needs and interests of preschool children. That seems to me an eminently reasonable proposal—one that should be given very high priority by the Congress.

The statistic which I think is the most arresting that is in support of this is the statistic they have in here saying that the Na-

tion's 19 million preschoolers watch about 14 billion hours of television every year. So, there is a lot of sitting and watching of television.

I noticed that Ted Turner announced the other day that he is seriously pursuing the establishment of a 24-hour cartoon network to supplement CNN. So, this is an audience that people are addressing, one way or another. I think it is incumbent upon those of us in public office to see that some alternative to 24-hour cartoons is available. So, preschool instruction is the first.

Second is instruction for students in school. I do a series of student seminars each February in my State, and we did them 2 weeks ago at four locations in our State. We invite students from each of the high schools to come in. Each high school sends four to six students. And we talk about current events and issues that are of interest to them.

One of the issues we talked about was their own perception of the educational system that they were being instructed in. And I asked how many of those students had access to advanced placement courses. The answer was that the students in the large cities had opportunities to take advanced placement courses. The students in the small schools did not, with very few exceptions. That is something we can fix with technology.

There is no reason why every high school in this country should not be equipped to receive instruction and advanced placement courses, or a variety of courses, through television regardless of whether they have 2 students who want to take the course or 20 students who want to take the course. And again, I think cable can play a major role in making that possible.

And I just conclude, Mr. Chairman, with the obvious point that we have a tremendous number of channels being provided over cable television today. We have 35 channels that are beamed into the cloak rooms on the Democratic and Republican side right off the Senate floor. The problem is, as you go through those channels—public television does a good job, and I support their efforts.

But with the exception of the public television network channels, the rest of it is largely worthless. And we have 35 channels now. We may well have 60 in a year. The technology is there. We may have 80. Most of the TV sets sold today are equipped to receive at least 100 channels. And under those circumstances, Mr. Chairman, I think it is incumbent upon us to find the appropriate way to provide incentives for and encouragement for the cable companies to dedicate a certain number of those channels to instructional purposes.

Our proposal, as you indicated in your opening statement, was that each cable company would be required to dedicate a certain amount of cable capacity to instructional purposes. I am not sure of the right specifics in that proposal. We want to do something that is reasonable.

This is not meant to be punitive on cable stations at all. In fact, many of the cable operators in this country have been very aggressive in trying to bring their cable service to the schools. And I compliment them for that. The problem is, you bring the cable service to schools. If all you are showing on cable is a whole bunch of situation comedies, then it is not particularly valuable. So, I think we

need to address the dedication of channels to these instructional educational purposes as well.

Thank you very much, Mr. Chairman. I will be glad to respond to questions, or I would welcome a chance to ask some questions of your later witnesses.

Senator INOUE. Thank you very much, Senator Bingaman. I have just one question. After the debate in the Senate chamber, I took the liberty to discuss this matter with some of my friends who are educators. And the one concern that just about all of them expressed was, who will be in charge of preparing the programming?

They were concerned that if you just left it up to the cable operator, he would be free to just about designate anything as instructional education. Do you have any ideas? Should it be the public school system?

Senator BINGAMAN. Well, I think some of the witnesses you are about to hear from will give you more insight than I could, but my information is that the Congress has appropriated funds for the launching of a satellite to assist the Corporation for Public Broadcasting and Public Television. That satellite will have a capacity of up to 36 channels. That is the information I was given.

And as part of making that useful to schools or to anybody who would want to receive it, there is going to have to be a commitment to high-quality programming which will be in excess of what we have committed to in the past.

I think that there is a great deal, for example, in the case of pre-school instruction—I am informed there is a tremendous amount of quality programming that has been prepared. Someone needs to get to get it together. Someone needs to be responsible for ensuring that what is put out over the air is, in fact, appropriate. And I think the Public Broadcasting System might be the right one for that responsibility. I am not certain.

But I understand the concern. I think it is a very valid concern, and obviously we would not just want to leave it up to every local cable operator to decide what is quality instruction, and what is not.

Senator INOUE. Senator Stevens, do you have any questions?

Senator STEVENS. No, thank you Mr. Chairman.

Senator INOUE. Well, thank you very much. Would you care to join us here? And now, may I call upon the special panel. First, the president of America's Public Television Stations, Mr. David Brugger; the president of the United States Distance Learning Association, Mr. Harry Miller; chairman and chief executive officer of Discovery Communications Inc., Mr. John Hendricks; and the senior vice president for Broadcast Operations of Public Broadcasting System, Mr. Howard Miller.

Gentlemen, I thank you all for joining us this morning. And if I may, may I call on Mr. Brugger.

STATEMENT OF DAVID BRUGGER, PRESIDENT, AMERICA'S PUBLIC TELEVISION STATIONS, WASHINGTON, DC

Mr. BRUGGER. Thank you, Senator Inouye, and the committee for giving me the opportunity to testify. And I want to thank Senator Bingaman and his staff for its role in encouraging this hearing. All

of us in public TV appreciate the interest and leadership you have shown in educational technology.

Let me express my particular thanks, Senator Inouye, to you and your staff for your leadership on S. 12. It will go a long way toward ensuring educational TV's presence in the video marketplace.

However, on behalf of America's Public Television Stations, I would suggest that the telecommunications marketplace is undergoing so many fundamental changes, and doing so quickly, that additional steps must be taken if we are to utilize the breathtaking potential that TV offers for educational television.

The future is now. We have all heard about Time/Warner's 150-channel system that offers popular movies starting nearly every half hour, and about GTE's fiber optic experiment that allows participants to interactively bank, shop, and pay their bills from their home, and have access to a large library of movies. But availability of technology does not automatically mean that the potential for educational TV is going to be realized.

I would hope that we can make it just as convenient for a student in Hawaii or New Mexico to get instruction from a master science teacher located hundreds of miles away, as it is for a Queens cable subscriber to get Thelma and Louise. But that is not a given.

Yes, technology can be used, as Senator Bingaman said, for 24 hours a day of cartoons as easily as it can be used to offer calculus classes, or to retrain workers, or to prepare preschoolers. I have nothing against cartoons, but it will be a national tragedy if we do not go beyond pop entertainment to realize the educational potential of video technology.

And that is why your proposal, Senator Bingaman, should be given serious consideration, along with other steps which can be taken to realize the educational potential of video technology. The Government has always recognized the need for educational television. The Congress acted to create and sustain it, and the FCC has set aside spectrum to assure its delivery.

As each new video medium emerges, we need the 1990's equivalent of the 1950's FCC channel reservation. Unless capacity is designated for educational use, the potential of telecommunications may never be realized. The cable public television carriage agreement was reached in the context of limited cable channel capacity. But the advent of digital compression technology may require other measures.

Specifically, we appreciate the fact that S. 12 would reserve 4 to 7 percent of DBS channel capacity for public telecommunications. But we hope you will make the provision stronger. In considering a national policy for a new broad band fiber network, we urge you to reserve a portion for public telecommunications services. An appropriate benchmark to start is the 30-percent capacity of the fiber network—the same portion of broadcast spectrum that was set aside for noncommercial uses.

We also urge you to ensure that public service program suppliers and the American public have access to a new broadband capacity at either no charge or reduced rates. Today, the average school has one TV set for every four classrooms. It has one videocassette recorder for every six classrooms. Senator Bingaman held hearings

last July dramatizing the fact that much of this technology already in place was not being used because of lack of access. We have to find funds to help those end-users use this equipment.

None of us has the ability to predict exactly what the future technological landscape is going to look like. We look forward to working with our colleagues in cable, in telephone, and in the DBS industry as we attempt to sort this out. We in public television are aware of the economic realities involved in starting new businesses. And we do not want to be an impediment.

It is in our interest that there be a variety of successful distribution mechanisms available for educational and public service programming. We also know that we will need you, as we always have, to lead the way in policies that promote the public interest.

We cannot afford an end result of a society of information haves and have-nots. Public TV is the only locally controlled communications medium in this country whose sole reason for being is to make and distribute programs for the public for educational, rather than commercial, purposes. American citizens pay a large amount of the costs through their donations and their taxes, and they deserve to benefit from that investment.

Only through enlightened public policy can we ensure that our high-technology future will deliver the promise of educational telecommunications.

Thank you.

Senator INOUE. Mr. Miller.

STATEMENT OF HARRY MILLER, PRESIDENT, U.S. DISTANCE LEARNING ASSOCIATION

Mr. HARRY MILLER. Thank you, Mr. Chairman, members of the committee. It is a pleasure to speak to you this morning and we welcome the opportunity.

Let me briefly tell you a little bit about the U.S. Distance Learning Association, since it is a relatively new arrival on the distance learning scene. Founded in 1988 as a nonprofit association that now represents over 700 individual, corporate, education, and other association members representing both K to 12, higher education, continuing education, corporate training, as well as equipment and transport providers.

The knowledge of the issues that I bring to the discussion today comes from 3 years on that board, as well as 10 years in the classroom at college as well as high school levels, and 5 years as academic dean at Vermont Technical College, and as the founder of Vermont Interactive Television, which is a statewide two-way audio-video network used for instructional as well as teleconferencing purposes.

The basis for these remarks is the U.S. Distance Learning Association policy recommendations that were released here in Washington last October. Those recommendations were developed with the help of over 90 experienced practitioners in the field of distance learning in a 3-day debate that we conveniently held in my home town of Burlington, VT. The results of that forum were unanimously approved by the U.S. Distance Learning Association board of directors.

Let me describe two general themes, I think, that came from the forum, and then specifically react to Senator Bingaman's amendment. First, I think it is very clear now that distance learning has clearly demonstrated its potential to deliver quality programming to learners regardless of where they are working or where they learning, the time they want to learn, and has clearly removed a lot of inappropriate and unnecessary barriers to instruction available at the site of the learner.

Additionally, it has been demonstrated that distance learning is a critical tool in supporting schools delivering instruction and thinking about instruction differently than they do today. In other words, it is a critical component for restructuring America's schools to meet the Nation's educational goals.

In addition, it allows instructors to tailor programming to the individual learning style of students. Traditionally, most teachers still use pretty much a lecture presentation, which is very suitable for a significant portion of the learning population, but not for all. Distance learning allows people to customize to meet individual learning styles, and also to support small group collaborative learning, as well as individual learning, which are the very skills that we hear are required by the business community and the Nation as a whole, as we move forward into the 21st century and an information age.

The second theme, however, is that there are many, many impediments—artificial impediments—to furthering the development of distance learning for all users. Digital technologies have blurred the traditional boundaries between institutions.

We must put in place a series of new policies that will take away the artificial barriers to the growth of distance learning. Any one of those activities taken by itself will certainly move the process, but not be nearly as effective as if we approach this change, and complex change process, in a more systemic fashion. And I am pleased to hear that the committee is considering a series of more in-depth discussion on issues revolving around educational technology, the barriers that are there, and its future potential for improving the learning of students in the United States.

Specifically, on the recommendation here to modify S. 12, Senator Bingaman's proposal, the board has not had a chance to react specifically to this proposal. But it is absolutely consistent with one of the recommendations of our policy forum, which I will read to you now and then explain it in some smaller words. We recommended specifically that the Federal Government provide incentives for telecommunications carriers to provide dynamically allocated, interactive, broadband service on a common carrier basis to schools, libraries, and other learning sites.

In simpler phraseology, basically, we are asking that the schools and other learning sites have access to a reasonably large bandwidth facility at their location which is available, essentially, on a dial-up basis. It is available when they need it for the amount of bandwidth they need. And, that it be available on a common carrier basis in that schools have the opportunity to choose the programming from whatever source they deem most appropriate.

That source might be a neighboring school which has a master teacher. It might be the programming of a cable carrier, such as

the Discovery Channel or the Learning Channel, who deliver excellent programming. It might be that of a public broadcast channel. It might be a visit from a distinguished scientist or Government official. It might be a stroll through the National Gallery of Art. It should be the opportunity of the individual faculty member to select the source of the programming and the time it is most appropriate to use.

Additionally, we would encourage that as you debate this issue further, you consider the nature of education as being more than broadcast technology, but to look at the interactivity that is necessary in many applications for dialog between the learner and the provider of the program.

We welcome you to continue this debate and hope you will explore other opportunities to get broadband access to schools as quickly as possible, so that the distance learning community can reach its full potential in restructuring America's schools to meet the Nation's education goals.

Thank you.

[The prepared statement of Mr. Harry Miller follows:]

PREPARED STATEMENT OF HARRY R. MILLER

My name is Harry Miller, and I am the President of the United States Distance Learning Association (USDLA). The principal objective of the association is to provide national leadership in promoting distance learning and the advanced telecommunications infrastructure it requires. Founded as a non-profit association in 1988, the USDLA represents over 700 individual, corporate, education and association members. Members represent K through 12, higher education, continuing education, corporate training, equipment and transport providers.

My knowledge of the issues and barriers impeding the growth of distance learning comes from three years on the USDLA Board of Directors and fifteen years of practical experience. I have ten years of classroom teaching experience at high school and college levels and I was the Academic Dean at Vermont Technical College for five years. At Vermont Tech, I founded Vermont Interactive Television, a statewide interactive two-way video network used for instruction and teleconferencing. For the past three years, I have been employed by New England Telephone.

The basis for my remarks is the USDLA Distance Learning Policy Paper released last October. Our policy recommendations were developed with the help of ninety experienced practitioners representing thirty-three states at a three-day forum last summer. These leaders (representing educational and corporate distance learning providers and users, equipment and transport providers, and federal and state policy makers) debated the changes in education and communications policy needed for the 21st Century. The resulting recommendations were overwhelmingly endorsed by the forum participants and unanimously approved by the USDLA Board.

Distance learning has proven its potential to improve student and teacher performance while maximizing the use of scarce resources. The restructured school must bring expert resources to the classroom and substantially supplement or replace the dated, non-interactive material used today if we are to realize the nation's education goals and maintain our economic competitiveness.

Distance learning might be better described as personal learning for it removes the barriers of space, time and location. Since Socrates, effective education has relied on conversation and debate between students and teacher facilitators. Distance learning facilitates both, through a wide variety of resources. Technology allows teachers to customize instruction to meet individual learning styles and facilitates small group collaborative learning. Ubiquity of distance learning will ensure that we can reach all individuals regardless of their location, learning style, or when they are available to learn.

There are, however, significant barriers to using these powerful new tools. Today's education, communication and information policies were developed long before the advent of distance learning technology. Digital technologies have blurred or eliminated traditional institutional boundaries. New policies must be put in place that remove artificial barriers that are impeding the nation's ability to realize the benefit of distance learning.

Change must occur in virtually all aspects of our current educational and telecommunications systems simultaneously. Such systemic change will require significant, long-term commitments of time, energy, and resources from teachers, parents, students, administrators, and business and government leaders.

The USDLA Board has not had the opportunity to review this amendment in detail, and we are not prepared to take a particular position at this time. However, we applaud Senator Bingaman for his commitment and his stimulation of the debate on one of the critical barriers facing the ubiquitous availability of distance learning. USDLA recommendations are consistent with the goals of this amendment. Specifically one of the USDLA recommendations is:

Provide incentives for telecommunications carriers to provide dynamically allocated interactive broadband service on a common carrier basis to schools, libraries and other learning sites.

The USDLA envisions two-way video service available to schools when they need it from whatever resource is appropriate. It may be live instruction from a teacher in a neighboring school or from across the nation. It may be prepared instruction such as the excellent programming of the Discovery Channel. It may be a visit from a distinguished scientist or government official. It may be a stroll through the National Gallery or Art. Ubiquitous connection will allow all of this and more. The availability of interactive broadband service provides a richer opportunity for learning than traditional broadcast programming.

The USDLA encourages you to consider this amendment and other alternatives to deploy interactive broadband connectivity as rapidly as possible. I hope you and your colleagues will give future consideration to the other issues addressed in our policy paper. If acted on as a whole, all of the learning community will benefit and the consensus needed to sustain the complex change process required can be achieved.

Thank you for the opportunity to express our views. The USDLA pledges our continued commitment and resources to aid your deliberations.

UNITED STATES DISTANCE LEARNING ASSOCIATION NATIONAL POLICY RECOMMENDATIONS

The Problem

The early 1980's found the country in a severe recession. We were deeply concerned about our economic future. Many Americans were persuaded that our economic prospects were dim as long as the quality of education continued to decline. A litany of private and public studies and reports documented the decline and offered a vast array of solutions.

The early 1990's find the country again slowly recovering from a recession. While there has been much debate, there has been only scattered success in restructuring and improving America's schools. Many now recognize that the decline of our educational system at all levels from K-12 through higher education, is only one of many areas of growing concern in our economic infrastructure. The nation's highways and railroads, water and waste systems, communication networks, education and corporate structures all represent areas requiring attention if we are to meet the challenges and global competition of the 21st century.

The global economy of which we are a part is information driven and operates at a pace in excess of our prior experience. A new understanding of the infrastructure standards necessary to support the kind of information based work force our nation must have is required. The new infrastructure requirements challenge the most basic premises of the American economic system.

Our current infrastructure developed the world's most productive economy. Our success was based on a national communications system unequaled by our competitors, mass production techniques that made it possible to employ modestly skilled workers to produce high quality, inexpensive goods in large volumes, and a transportation system that was fast and efficient. Today, communications and transportation systems are more competitive worldwide, and workers in other nations are willing to work longer hours and for lower wages than their American peers. We can continue to compete in this manner, but only at existing global wage levels with a corresponding massive decline in our standard of living; or we can revise our view of the market and the role of the worker.

High wage level societies will be those based on the use of highly skilled workers backed by advanced technologies and with ready access to a deep array of knowledge bases. Economic advances will be dependent upon improvement in intellectual rather than manufacturing productivity. border to compete we must rebuild our economy to match the needs of the information age.

This restructuring is clearly linked to economic success and it depends on a strong education system. Redefining our national resources is not only necessary to prepare Americans for work but, even more importantly, to prepare them as citizens in a self-governing society. We must provide access to a shared cultural and intellectual experience to enable citizens to make informed judgments about the complex issues and events that will characterize the 21st century. The cost of not doing so may be more than a decline in our standard of living, it may also cause erosion of our democratic tradition at a unprecedented time in history when the world is moving closer toward the democratic model. We cannot fail in our leadership now.

The critical natural resources of the information age will certainly be education and access to information. While the nation cannot ignore the pressing problems of health care, environmental waste, or decaying cities, we must create a national vision that will focus on the long term economic health of the country. Without this we will not have the resources needed to combat the myriad of problems facing us in our increasingly small world. A new national vision must recognize the interdependence of education, information access, and economic development. One without the others will not produce success.

The Opportunity

The United States Distance Learning Association represents universities, K-12 schools, and corporate training interests in a association of over 500 members, and is uniquely suited by purpose, membership, and experience to help articulate a new vision for responding to these new information age core infrastructure needs. Thus, when we called upon distance learning leaders in all over the nation in July of 1991, for our National Policy Forum, we were able to gather together some of the most experienced practitioners in the U.S. to help us explore policy issues.

Distance learning facilitates high performance education by encouraging new instructional techniques and by allowing electronic access to information from any location. Educational technology, in class or at a distance, is beginning to have a profound impact on the organization of schools, the way students are taught and coursework they can access. It is not only an educational tool, but also a driving force behind restructuring efforts in member organizations. Many successful corporations and schools have already reorganized with technology in mind to capitalize on its potential as a problem solving and information leveling device.

Many of our members represent national leadership in distance learning and their institutions do things differently to accomplish better results, often at the same or less cost. Recognizing the many demands on our national resources, educational technology can be the key to improving student and teacher performance while maximizing the use of resources. While in no way a replacement for the teacher, distance learning can cost effectively bring rare and traditionally expensive specialized resources to the classroom. Distance technologies can expand teaching resources to include practicing scientists, business people, government leaders, health care specialists, parents and seniors and that helps to involve students. The restructured school must bring these resources to the classroom and substantially supplement or replace the dated, non-interactive material used today if we are to realize the goals of "America 2000" as set out by the President and Secretary of Education.

That students learn in a variety of ways is an accepted fact. Yet, most instruction today uses group lecture techniques that fit the learning styles of only a few. Educational technology allows teachers to customize learning and to move toward individual and small group collaborative learning. These are the very skills needed for high wage earner societies hoping to compete in a global economy.

Distance learning might better be described as personal learning for it removes the barriers of space, time and location. Since Socrates, effective education has relied on conversation and debate between students and teacher facilitators. Personal learning technologies facilitate both through a wide variety of resources. Interactive dialogue can happen via interactive television, conference calling, or computer electronics. Delayed dialogue can happen via voice or electronic mail. No one technology, delivery system, or mode of dialogue is best suited to meet all student needs.

The ubiquity of all distance learning technologies will ensure that we can reach all individuals regardless of their location, learning style, or when they are available to learn.

The Barriers

There are, however, significant barriers to using these powerful new tools. Today's education, communication and information policies and regulations were developed long before the advent of distance learning capability. New technologies, particularly computers and digitally processed and transmitted information, have blurred or eliminated institutional boundaries in the once discrete world of voice, image, and

video. New policies must be put in place that remove these barriers so the nation can realize the benefit of distance learning.

The Recommendation To define these new policies, the USDLA recently convened a National Policy Forum. Over ninety leaders in distance learning representing educational and corporate distance learning providers and users, equipment and transport providers, and federal and state policymakers convened to debate the changes in education and communications policy needed for the 21st century.

The recommendations that follow represent their concerns and were unanimously approved by the USDLA Board of Directors as representing the interests of our membership. They encompass both education and communications policy, the inextricably linked cornerstones of our new economic infrastructure.

In order to accelerate and fulfill the tremendous potential of distance learning and educational technology, federal, state and local government should:

1. Develop a vision for a national infrastructure recognizing the critical importance and interdependence of systemic educational reform and advanced telecommunications services.

2. Bring coherence to educational technology and distance learning funding and focus those resources on educational restructuring projects. All future education initiatives or policy should include distance learning as an option.

3. Develop national demonstration sites for educational technology and distance learning that disseminate research results, educational applications, and effective teaching strategies.

4. Provide incentives for teacher training institutions to restructure pre-service and in-service programs recognizing the importance of communication and information technologies.

5. Provide incentives for regional and professional accreditation associations to recognize and encourage appropriate uses of distance learning technologies.

6. Ensure that financial aid programs recognize distance learning as a peer to traditional course delivery.

7. Address educational use via distance learning technologies as an issue for special attention within copyright laws.

8. Provide incentives for states to remove barriers to distance learning around teacher certification, textbook adoption, and accreditation practices.

9. Provide incentives for faculty who maximize resources and achieve quality instruction through use of appropriate educational technologies.

Recognizing that all forms of advanced telecommunication services are critical to supporting distance learning and educational reform, federal, state, and local government should:

1. Facilitate the development of a broadband educational network utilizing the public network with an open system architecture and guarantee equal access and governance responsibilities for all educational constituencies.

2. Provide incentives for telecommunications carriers to develop special pricing for educational applications.

3. Provide incentives for telecommunications carriers to provide dynamically allocated broadband service on a common carrier basis to schools, libraries, and other learning sites.

4. Remove the regulatory and business restrictions on telecommunication carriers for distance learning and educational applications.

5. Maintain "set asides" for educational applications in "RF" frequency allocations.

6. Provide incentives to ensure adequate, cost-effective access to satellite transponders for educational applications.

Restructuring American education, like all systemic change, will require significant, long term commitments of time, energy and resources from teachers, parents, students, administrators, business and government leaders. Change must and can occur in virtually all aspects of our current educational system simultaneously. Each recommendation will affect all of the learning constituents in some way. Acted on individually, their implementation will affect each constituency differently and the reform agenda will be undermined. If acted on as a whole, all of the learning community will benefit and the consensus needed to sustain the complex change process required for restructuring can be achieved.

Senator INOUE. Thank you very much, Mr. Miller. Now, may I call on Chairman Hendricks, please.

**STATEMENT OF JOHN HENDRICKS, CHAIRMAN AND CEO,
DISCOVERY COMMUNICATIONS, INC.**

Mr. HENDRICKS. Thank you, Mr. Chairman, and members of this subcommittee. My name is John Hendricks, and I am the founder, and chairman, and CEO of Discovery Communications, the company that created the Discovery Channel on cable television. We are also now developing a new service—the Learning Channel, which we acquired in May 1991.

I am pleased to have the opportunity to testify today on the proposal by Senator Bingaman, which is aimed at expanding the availability of instructional programming to the public at home, in the workplace, and the school. I very much appreciate that this issue has been brought to the Senate's attention by Senator Bingaman, so that we can explore this important topic today.

Our company, I believe, is particularly well-suited to address the issue of education on television. Our very mission is devoted to creating television for the lifelong learner to savor at home, and for educators, to help them advance active learning in the classroom. My original papers of incorporation, filed when I founded our company in 1982, were under the name Cable Educational Network, Inc. Our commitment to education has been there from the very beginning. The same is true of the cable industry as a whole.

What I am here to tell you today is that Senator Bingaman's amendment, while clearly well-intentioned, appears to be based on a faulty premise and reaches the wrong conclusion. Cable television, in fact, has much educational content, and cable operators are doing a great deal to promote it in our Nation's homes and schools.

First, let me outline just a sampling of the educational content on cable. And here is where I really take issue with Senator Bingaman's comment that beyond PBS on cable, everything else is "worthless." Of the 76 national cable television networks, 20 offer educational programming. For several cable networks, education and information provision are their primary missions. These networks include our own—the Discovery Channel and the Learning Channel, as well as others such as C-SPAN 1 and 2, the Monitor Channel, and Mind Extension University—a national distance learning network.

If you will indulge me for a moment, let me try to outline for you from a programmer's perspective, just exactly what it takes to put a quality educational product on the air. For example, the kind of commitment we make at Discovery involves a lot more than just putting a camera in front of a classroom instructor.

In an age when all of us, especially our young people, are so attuned to the impact of visual images, it would be an irresponsible waste of funds for us to put out an educational product that was not appealing in both content and production value. To do this well, to make good television, takes money. This year, for instance, we will spend approximately \$130 million to fund the programming efforts of our two networks.

We recognize that if we are to do our job effectively, in providing the thrill of discovery or opening up a world of ideas on the Learning Channel, we must devote not only the necessary financial re-

sources in the short-term, but also the mandatory companywide commitment in the long-term.

Since our launch of Discovery in June 1985, we believe that we have been able to reinvigorate the concept of educational television. We are proud to be among a number of dedicated media companies who will, I am certain, continue to dedicate themselves to providing high-quality educational products within the context of the free marketplace.

I would like to draw for you an analogy that compares the television industry with the publishing industry. I do this in order to lay out what I see as the future direction for educational programming on television.

We have a great tradition in this country of major publishing houses, such as Random House, McGraw-Hill, Macmillan, Prentice Hall, and many others. These competitive commercial enterprises develop all the textbooks and other classroom materials used in America today.

While some may quibble with the content of these textbooks for a variety of reasons, I think we can all agree on the bottom line, these great publishing houses of America have for many years, some for over a century, been responsible corporate citizens who have devoted considerable time and money to putting out a product that is of great use to students and teachers.

May I be so bold to suggest that what you will find when you examine the goals and missions of Discovery and the Learning Channel, and other educational oriented cable television networks, is a similar kind of commitment to providing quality educational product within the framework of the free enterprise system.

So, in conclusion, Mr. Chairman, I believe that the Bingaman amendment goes too far in its efforts to mandate franchising authorities and cable operators to set aside channels for "instructional programming."

The cable industry is already at the forefront of educational programming, and through concerted industrywide efforts, such as cable in the classroom, as well as the initiative of companies like our own, the situation continues to dramatically improve with every passing month. Cities already have the power to set aside cable channel capacity for educational or instructional use. As is apparent in many areas around the country, they are doing just that.

Thank you, Mr. Chairman. I look forward to questions that you and the other members may have.

[The prepared statement of Mr. Hendricks follows:]

PREPARED STATEMENT OF JOHN S. HENDRICKS

A. INTRODUCTION

Mr. Chairman and members of the Subcommittee, my name is John S. Hendricks. I am the founder, Chairman of the Board, and Chief Executive Officer of Discovery Communications, which owns and operates The Discovery Channel and The Learning Channel. I am pleased to appear before you today on behalf of the National Cable Television Association to discuss our concerns about the Bingaman amendment.

The Discovery Channel is a basic cable television network which was launched on satellite June 17, 1985, and is today available in more than 56 million households across the United States. Fifty-four percent of all Americans today can view The Discovery Channel's programming, which is primarily non-fiction, documentary ma-

terial in the areas of nature, science and technology, history, human adventure, and world exploration.

In May 1991, we acquired The Learning Channel, a cable network which complements Discovery with its mission to present a world of ideas to all types of learners. As its name suggests, The Learning Channel is a network dedicated to education. Such programs as *The Voyage of Charles Darwin*, *Ten Great Writers*, *Everyman's Guide to the Universe*, *Human Rights with Jimmy Carter*, and *The Metropolitan Museum of Art* help the approximately 16 million subscribers of The Learning Channel to better understand the world.

B. THE BINGAMAN AMENDMENT

The cable industry shares Senator Bingaman's interest in expanding the availability of instructional programming to the public—at home, in the workplace, and at school. The industry also supports this committee's efforts to increase the creation and dissemination of educational programming on different media, including cable. Indeed, the cable television industry is making a substantial contribution to both creating and distributing educational and instructional programming.

However, the Bingaman amendment—although clearly well-intentioned—appears to be based on a faulty hypothesis, i.e., that cable programming has little educational content and that operators are doing little to promote education in or out of our nation's schools. Moreover, it reaches the wrong policy conclusion—that the federal government should mandate content-specific set-asides for instructional programming on cable (and only cable) systems. It is—and should be—up to local communities, through their franchising authorities, to determine how many channels local operators should reserve for educational use.

For these reasons, we would urge the Committee not to adopt the Bingaman amendment. Current public policy and the strong interest that the cable industry has in education is yielding the right result: Americans today have more instructional programming both at home and at school than ever before. As the cable industry continues to invest in educational ventures, this trend will not only continue but accelerate.

C. THE CABLE INDUSTRY CURRENTLY DELIVERS SUBSTANTIAL EDUCATIONAL PROGRAMMING

There are four important areas in which cable television is working to improve education in the United States (a more detailed discussion of some of the educational and instructional programming provided by the cable industry follows in section E).

(1) *Innovative Instructional Programming:* Out of the 76 national cable television networks, 20 offer educational programming. For several cable networks, education and information are their primary missions. These networks include The Discovery Channel, The Learning Channel, The Monitor Channel, C-SPAN, and Mind Extension University. There are several more cable networks that have instructional opponents to their programming, such as CNN, Nickelodeon, CNBC, The Family Channel, American Movie Classics, Arts & Entertainment Network, The Disney Channel, BBD, ESPN, USA Network, and Bravo. These networks reach directly into nearly 60 million homes across the United States.

(2) *Outreach by operators and programmers:* Cable operators have joined with programmers to create Cable in the Classroom, a nonprofit service offered by the cable industry to help promote education in the United States and facilitate the distribution of instructional material to our nation's schools (see section E.1). In addition, some cable systems offer "Local Origination" (LO) programming.

(3) *Access channels mandated by local franchising authorities:* Under the Cable Act of 1984, "a franchising authority may establish requirements in a franchise with respect to the designation or use of channel capacity for public, educational, or governmental use * * * [section 611(a)]. In the case of Montgomery County, Maryland, where Discovery Communications is headquartered, the county council required Cable TV Montgomery (CTM) to reserve 13 channels for public, educational, and governmental (PEG) use. Eleven of these 13 channels are active and represent 17 percent of Cable TV Montgomery's current channel capacity of 66. There are 5 full-time educational channels on CTM: 2 for use by Montgomery County Public Schools (MCPS), 2 for the University of Maryland, and 1 for Montgomery College; in addition, 8 channels are designated for local community and governmental programming, including the Montgomery County Council, the Rockville City Council, and the City of Takoma Park. Similarly, nearby Fairfax County, Virginia, requires Media General to set aside 14 of its 120 channels for PEG use. Cities may require as many access channels as they choose in their cable franchises in addition to the

commercial leased access channels required by the Cable Act and the local origination channels programmed by cable operators.

(4) *Voluntary Carriage of public television stations:* As Senator Bingaman noted on the Senate floor January 30, cable systems already carry PBS stations—another source of educational programming. They do so voluntarily, in the absence of formal must carry rules. In many instances, the local cable system carries all local PBS affiliates, which in metropolitan areas can total three or more. For example, in Montgomery County, Cable TV Montgomery carries three public stations (WPPT, WETA, WHMM) while in Fairfax County, Media General carries four (WMPT, WETA, WNVF, WNVG). This pattern is typical.

Moreover, under the terms of a must carry agreement which NCTA reached in 1990 with the National Association of Public Television Stations (NPTVS, now APTS, the Association of Public Television Stations), cable systems would have to carry at least one public station if they have fewer than 12 channels and at least three stations if their channel capacity exceeds 54. Under the FCC's old must carry rules, which were overturned by the federal appeals court, cable operators were required to carry no more than two public stations. Where communities do not have their own public broadcast station, cable operators import public television signals from other towns. The NCTA-APTS agreement was incorporated into H.R. 5267, which passed the House of Representatives in September 1990. It is also part of H.R. 1303, the cable bill pending in the House Energy and Commerce Subcommittee on Telecommunications and Finance, and S. 12 (in modified form), which passed the Senate last month.

D. REQUIRING CABLE OPERATORS TO SET ASIDE CHANNELS BASED ON EDUCATIONAL CONTENT WOULD RAISE SERIOUS FIRST AMENDMENT CONCERNS

Court decisions striking down two sets of FCC "must carry" rules make clear that mandatory cable channel set-asides raise First Amendment issues. While the courts have left open the possibility that some limited form of must carry requirement might survive constitutional scrutiny, it is a virtual certainty that the First Amendment will not permit a purely content-based set-aside which creates a governmental preference for "instructional" programming over "news," "cultural," and other forms of informational or entertainment programming. In addition to violating the rights of other cable programmers, the Bingaman proposal would impinge on the rights of cable operators (by restricting their editorial judgment) and cable subscribers (by limiting their viewing choices). In fact, if enacted, the Bingaman proposal would enable for-profit programming ventures which characterize themselves as "instructional" to claim channel capacity—on a priority basis—ahead of other programmers.

The Bingaman amendment differs from the must carry agreement reached between NCTA and APTS in that Congress has recognized that there is a compelling national interest in making free, over-the-air "public" television available to all Americans by allocating a portion of the public spectrum for non-commercial educational use. The NCTA-APTS agreement merely seeks to further that compelling national interest by ensuring that cable subscribers have the same access to broadcast public television signals as non-cable subscribers.

E. EXAMPLES OF THE CABLE INDUSTRY'S EDUCATIONAL PROGRAMMING AND OUTREACH

The cable industry is at the forefront of distance learning, developing instructional technologies, and creating innovative educational programming, as can be seen from the following three examples:

1. *Cable in the Classroom*

Cable in the Classroom is a nonprofit service of the cable television industry. Its members—20 cable program networks and 43 Multiple System Operators (MSOs)—offer educational programming from the performing arts and curriculum-based programs for math, English, science, social studies, biology, foreign languages, and health/vocational/technical studies as tools for learning. Each of the member cable networks offers a non-commercial block of programming specifically for classroom use.

Programmer members of *Cable in the Classroom* are committed to several goals. They offer a variety of high-quality cable programs without commercial interruption; supply curriculum-based support materials at low or no cost to assist teachers in using the programs in the classroom; and provide extended copyright clearances that allow teachers to replay *Cable in the Classroom* programs on videotape.

Cable in the Classroom is an effective teaching device on the local and national level. On the local level, member cable systems provide free installation and free basic service to all public junior and senior high schools passed by cable. Some

cablees also offer satellite dishes at cost for those public schools outside the cable delivery area; others offer cable installation to all public schools, not just junior and senior high schools. Local companies work with their schools to build awareness of the diversity of programs available on cable. Together, they attempt to address equipment needs and encourage effective use of programs.

On the national level, *Cable in the Classroom* serves three purposes: to build awareness of the cable industry's educational initiative; to develop materials to support cable companies as they work with educators; and to serve as a clearing for statistical and anecdotal information on cable's use in schools. As of November 1991, *Cable in the Classroom* was serving over 12,400 schools and providing more than 500 hours a month of commercial-free programming to 10 million high school students. The number of students served is expected to double within a year, and the industry's goal is to provide educational programming to every public high school by September 1992 and every state-accredited private secondary school by September 1994.

The monthly *Cable in the Classroom* magazine offers detailed educational program listings by curricular areas, as well as feature articles and insights on how teachers across the country use different programs in the classroom. Copyright information is also included in the *Cable in the Classroom* magazine, as is information about purchasing additional rights when rights expire. An on-screen announcement of the specific copyright clearance for each program further aids teachers in utilizing the programs. The cover story for *Cable in the Classroom* in February was "The Battle Begins—Election '92: How cable can help you beat the sound-bite blues." It provides teachers with detailed guidance "on how to use cable television's coverage of the race to the White House to teach current issues, principles of democracy, and political action." The article includes (a) an introductory essay; (b) a timeline of campaign events; and (c) "Campaigns on Cable," a guide to relevant election and political programming.

2. Kind Extension University

Jones Intercable founded Mind Extension University—"The Educational Network"—in 1987. The goal of ME/U is to "make all America a school," i.e., to combine the technologies of cable and satellite television with the "resources of the nation's top distance learning providers to create a nationwide "electronic classroom without walls." ME/U is one of the fastest growing cable networks in America, currently serving more than 17 million cable and satellite-dish households, with an additional 3 million expected by early 1992.

The network has been called a "lifelong learning resource" for a community because it presents several major program elements. On school days, it retransmits live, interactive, direct instructional material provided by the TI-IN Network of San Antonio, Texas. Offered are classes in foreign languages, mathematics, science, and student enrichment programs, as well as professional staff development for teachers. One real-life success story in distance learning concerns Remigio "Mico" Perales, a young man from Nordheim—population 369—in south Texas. Mico took his advanced mathematics and science courses—not available in his high school curriculum—via this interactive televised distance-learning vehicle. His performance earned him a scholarship to Massachusetts Institute of Technology.

In addition to secondary instruction, Mind Extension University delivers graduate and undergraduate courses, including an MBA program and a bachelor's degree completion program. It offers a literacy program, GED preparation, and English-as-a-Second-language program. This programming is delivered directly to the 17 million homes of cable subscribers who live in areas where the local cable system carries ME/U.

With the Library of Congress, ME/U presents each week the Global Library Project. This project, funded by a \$1 million grant from Jones Intercable, seeks to bring to the nation the largest repository of information in the world. ME/U is also affiliated with 20 of the country's colleges and universities including Penn State, Kansas State, the University of South Carolina, and Colorado State University. Its secondary school program provider, The TI-IN Network, was the managing partner of an original recipient of a Star Schools grant in 1988. The seed money provided by Congress enabled The TI-IN United Star Network to provide interactive instructional services to 316 sites, serving more than 20,000 students with credit and non-credit courses, and more than 100,000 teachers. The Office of Technology Assessment has documented the effectiveness of distance education, and of TI-IN's approach in its 1989 report to Congress, "Linking for Learning—A New Course for Education." In fact, the success of the TI-IN research and demonstration Star Schools project led OTA to introduce TI-IN to The Mind Extension University net-

work, thus providing a low-cost, efficient way to disseminate quality education, not only just to schools but also into the living rooms of America.

3. *The Discovery Channel/Learning Channel*

The Discovery Channel, the nation's fifth largest cable network with 56.2 million households, and The Learning Channel, which reaches 15.6 million households, make up Discovery Networks, a unit of Discovery Communications, Inc. Both networks are founding members of Cable in the Classroom.

We, at Discovery, are devoted to creating television for both the life-long learner at home and for educators to help to enhance active learning in their classroom. The Discovery Channel and The Learning Channel have complementary missions. The Discovery Channel aims to enlighten viewers by showing them the world: the beauty of a volcano; the intricacy of an ecosystem; the reality of war; the fascination of vintage aircraft; and the exhilaration of skydiving. The Learning Channel, on the other hand, is dedicated to feeding the imagination and showing its viewers a world of ideas from great writers, thinkers, explorers, inventors, journalists, painters and scientists.

For teachers, The Discovery Channel carefully creates a daily program that gives educators 210 commercial-free documentaries each year that they can tape and use freely in their classrooms. Called Assignment Discovery, this award-winning series was founded in 1989 to provide teachers with 25-minute documentaries that they can use—in whole or in part—with their established class plans and discuss during the average class period. Each documentary is aired on-air by discussion questions and suggested readings selected by the American Association of School Librarians. The goal of this program is not to fill class time with television viewing, but to work with educators to help them enhance their curricula. Assignment Discovery has won over 16 prestigious awards from educational and media organizations both in the United States and internationally.

At Discovery, we believe television can be used as a forum to help educators utilize the medium and assist young people in learning how to watch television more effectively. This spring, a teaching-with-television training video is part of Assignment Discovery's line-up—it offers tips on how to use television as an active learning tool, tips on teaching young people to be media literate, and tips on how to understand the images that television brings into their homes.

The Learning Channel, which we purchased last summer and are reprogramming, is also reaching out to the educational community with a breakthrough series for teachers to use in doing their profession and the state of education in America today. Teacher TV is a half-hour series created for, by, and about teachers; over 2,000 individual teachers were surveyed for their input into the programming and format. A co-production with the National Education Association, Teacher TV is designed as a communications tool that offers specific teaching strategies and practical resources to assist instructors in their efforts.

For prime-time viewing, The Discovery Channel presents the best documentaries the world has to offer and produces high-quality series and specials which offer viewers of all ages information about the state of the natural world, with such programs as "Blue Revolution," "In Celebration of Trees," and "In the Company of Whales." Programs such as "Buried Mirror with Carlos Fuentes, and Roger Kennedy's "Rediscovering America and World of Valor," shed light on historical and cultural issues.

The Discovery Channel has also made a major commitment to presenting groundbreaking public affairs specials that give its subscribers a context and understanding of the news events that swirl ever more rapidly around all Americans. The Washington Post recently hailed Discovery's revealing news journalism—"the documentary conference." That program, moderated Harvard Law Professor Arthur Miller, offered a remarkably candid examination of the decision-making that took the U.S. into war in Iraq.

Just yesterday, The Discovery Channel announced an unprecedented commercial-free public affairs programming event that builds upon this commitment to providing a valuable new dimension to television journalism. "The Presidential Candidates: Address to the Nation," scheduled for Sunday, March 8, will allow each of the major Democratic and Republican contenders to describe their vision for America's future.

The Learning Channel, as has been mentioned, is a network dedicated to education. Its new programming mission is to present a world of ideas to learners of all ages and help them make sense of the flood of information which bombards them every day. The Learning Channel is working with the American Library Association to create on-channel segments which recommends books to read in conjunction with the network's programs. This is one element in our commitment to literacy, and, in

the months ahead, The Learning Channel will unveil educational programs that encourage reading skills and help students creatively select careers.

To help promote usage of our programming, we partner with educators and businesses to put cable television to work for the educational community. Assignment Discovery's advisory board is made up of the National Education Association, the National School Boards Association, the National Association of Secondary School Principals, the American Association of School Administrators, and the National PTA. To create educational programming, we have joined with such respected institutions as the Getty Foundation for the Advancement of the Arts and the National Education Association. Discovery Communications recently signed an agreement between the Center for Democracy in Washington and the new Russian Federation for Discovery Communications to produce educational programming about America's democratic system that will be aired on Russian television, as well as on The Learning Channel. These are but a few of the strong partnerships in education which Discovery Communications has committed itself to building.

F. CONCLUSION

Although well intentioned, the Bingaman amendment goes too far in requiring franchising authorities and cable operators to set-aside channels for "instructional" programming. The cable industry is already at the forefront of educational programming, and has 20 networks that feature instructional material as part or all of their national programming. Leaders in this effort are The Discovery Channel and The Learning Channel. Moreover, cities already have the power to set aside cable channel capacity for educational and instructional use. As is apparent in the case in Montgomery and Fairfax Counties, they are doing so where there is local interest and demand. Surely the Committee does not intend for the Federal Government to reserve channel capacity which might be used by commercial ventures to force their way onto cable systems in the name of "instructional programming." The losers will be networks like The Discovery Channel and new, start-up programmers, who might be dropped or denied access on systems that have to reserve channel capacity for other uses under the Bingaman proposal.

Senator INOUE. Thank you, Mr. Hendricks.

May I now call Mr. Howard Miller.

STATEMENT OF HOWARD MILLER, SENIOR VICE PRESIDENT FOR BROADCAST OPERATIONS, PUBLIC BROADCASTING SYSTEM, ALEXANDRIA, VA

Mr. HOWARD MILLER. You have heard, Mr. Chairman, today from Mr. Brugger about public television's progress in expanding the reach of instructional television. The most important technological development is digital compression, which will allow public television to significantly increase the capacity of each transponder aboard its new satellite, TELSTAR 401.

PBS now expects to distribute as many as 36 channels of programming. Most of these channels will be devoted to instructional television. At the same time, PBS is developing a new interactive distance learning service that will allow students and teachers anywhere in country to communicate with each other.

This will be accomplished by what is known as very small aperture terminals, or VSAT. VSAT can provide two-way communication of voice, data, or video-phone type pictures between a central hub and hundreds of remote locations simultaneously. The remote locations use inexpensive 1- or 2-meter diameter satellite antennas.

In a typical PBS VSAT program, a televised course will be transmitted via satellite from a central studio complex to multiple classrooms. During live lectures and other teaching sessions, students respond to questions and solve problems interactively using the return transmission channel to communicate with other students or the teacher. In addition to interactive distance learning, the VSAT system offers many opportunities for educational applications, in-

cluding electronic bookmobiles, bibliographic data bases, professional development and training courses, and teacher workshops. These two new technologies—digital compression and VSAT—will make it possible for public television to assist in the delivery of a wide array of educational services. In cooperation with the Nation's pioneers in distance learning, such as the Satellite Educational Resources Consortium, known as SERC, PBS now sees realistic possibilities for making resources available to every classroom in the United States.

I would like to make three brief points about what we at PBS are learning as we try to make use of these new technologies. I will then be able to answer any questions about the technological issues or about our applications of these technologies.

My first point is that cable is but one means of delivering educational programming to the classroom. Delivery of instructional television can be accomplished by cable, but also by fiber optic link, by over-the-air, by microwave, or by space links.

The delivery systems needed to deliver services to classrooms will in each case depend upon what is already available in the community, and upon the needs of local educators and students. In some cases, it may be a satellite, VSAT, or microwave dishes. Or in others, cable, fiber, or telephone lines. And in others, perhaps ITFS or just the broadcast antennae.

Regardless of the way services are delivered, many schools will require the installation of fiber or cables into the classrooms, as Mr. Brugger has indicated. The extent that Senator Bingaman's proposal relates to the delivery of programs directed to the Nation's schools, I would say that requiring cable systems to transmit educational programming would indeed assist educators, but only to the extent that cable is available to or is deemed desirable by a particular school. In some cases, the timing of planned cable channel expansion will not occur rapidly enough to meet out very urgent educational needs.

Second, let me stress that video programs, whether delivered by cable or otherwise, are but one educational tool that can be used and delivered by the new technological telecommunications technologies.

Let us look for a moment at the educational technology from a user's perspective, rather than from the industry perspective. Ideally, each classroom should be equipped with access, not only to video but also to voice and data services. As I have mentioned, these services can be offered by a variety of means. But to use these services a school requires a number of different types of equipment such as computers, facsimile machines, videocassette recorders, video disk players, and TV sets. The challenge is to make the most services available at the least cost by integrating distribution technologies with the equipment necessary to use them.

I understand that the NTIA is now studying this issue, and that my colleagues at APTS are familiar with their work and would be happy to discuss this with you. I would respectfully suggest that the development and Federal support for funding of this so-called last-mile infrastructure, from an educational user's perspective, should be an area of special concern to this committee. New tech-

nologies are of little use, unless schools have near-term, cost-effective access to them.

My final point is that the proliferation of multiple and incompatible means for exploiting digital compression may not be in the best interest of the Nation's educators. We at PBS are working with a consortium of cable operators to develop a low-cost black box capable of receiving compressed television signals, either by cable or by satellite. This receive equipment, which PBS hopes will be available for purchase by schools at a cost of only \$200 to \$300 is, in our view, key to making the windfall of digital compression generally available for instructional television.

However, other satellite groups are pursuing different alternatives. For example, CLI-Skypix has developed a compression system that is already in use, and it was a recent announcement by Thompson/Hughes to develop a rival DBS system. Although this competition may be healthy from a commercial perspective, to the extent that these DBS services may include educational programs, we think that the proliferation of approaches presents pitfalls for the Nation's schools.

Schools will need to purchase more than one set of equipment to obtain access to the various services. We do not propose a solution to this Tower of Babel problem at this time. But none the less, we do wish to bring it to the committee's attention.

I would be pleased to answer any questions.

Senator INOUE. Thank you very much, Mr. Miller. With the permission of the committee, may I now call on the author of the proposal to begin the questioning? Senator BINGAMAN.

Senator BINGAMAN. Thank you very much, Mr. Chairman. Let me ask each of the witnesses if they could comment on how we get from the proposal to the actual implementation of this recommendation that the Carnegie Group has come up with, this recommendation that a ready-to-learn cable channel should be established working collaboratively with public television to offer programming aimed exclusively at the educational needs and interests of preschool children.

How do we get that done? What do you recommend that this committee or this Congress do to actually accomplish that? Could I ask each of you to please comment on that?

Mr. BRUGGER. Senator, in part I think we have to look at some of the services and where those services are, essentially take an assessment of what exists today in terms of programming for preschool children, what other ancillary services can be used for that, and then what it would take in terms of channel capacity, in terms of existing equipment and facilities, to get access especially for day-care centers.

We have two projects that we are working on right now. One is with the Children's Television Workshop, and it is called the PEP project, and it is preschool education and it is intended for day-care centers. Part of the problem we are having is getting the equipment and how do we get funds for equipment for day-care centers when we have the programs and the activities for preschoolers?

Part of the problem we are having is the funding for the materials for the day-care centers and the equipment for them to receive

some of the programming, even if it is videocassettes that they are taping off the air.

We have another one with Mr. Roger's Neighborhood, geared around his programming, and what we need is we need to look at that last mile. In other words, how do we make sure that all the people who are into child care can get the proper training in these materials and get the equipment necessary to receive the programming?

Senator BINGAMAN. I guess my concern—and then I will go on to the other witnesses here—is, Mr. Chairman, we did have some hearings in the Education Subcommittee on the issue of how to actually get some of this instruction to people who might use it, and there are lots of good sort of demonstration programs going on around the country, and the SERC one was referred to down in South Carolina.

It is a very good program, but when you look at the number of people who are benefiting from it, I mean they are very proud that they have got—I mean, they have 3,500 last year. This year they have got 5,000. The problem is we have got millions of people out there, millions of students who are growing up without access to this.

We have got 19 million preschool children today in this country, and the level of effort is very minimal. I mean that we do not have—we do not seem to be able to make the breakthrough to get this stuff provided on a wide-scale basis. That is my reaction.

Mr. BRÜGGER. And in part I think that is what NTIA has asked a number of organizations to look at.

We are in the process now of working with the Aspen Institute to come up with a proposal for them to start some systematic evaluation and do a study that may take a year but it will go through and establish a national data base which does not now exist, in terms of all of the facilities, to make sure that we do not build something that has redundancy and that we make use of existing facilities and look at the technology, look at what individual States are already doing, whether it is South Carolina, which in a couple of years is going to have 20 satellite channels just for their own State, as well as a host of interactive communications, or Iowa where they are putting in a fiber network.

We need to find a way to find out what is out there, how to connect all of those systems, and then, of course, as you mentioned, it is that last-mile cost in getting the equipment into the centers that need it.

Mr. HARRY MILLER. Let me make one comment first that is sort of a little bit general which I think is often overlooked in the field of distance learning in that there is a lot more opportunity beyond video. There is a tremendous potential, I think, in computer-based and image-based transmission which is oftentimes overlooked when folks talk about distance learning or delivery of instructional programming.

People tend to think in the traditional form of video, and I think that students have—as a matter of fact, in a survey we did in Vermont we found that students did not want to see any more video, they wanted to work on computers in computer-based learning. They found that much more exciting than another talking head, or

even a program which is similar to what they see most of the time, and so I think that one needs to keep that in mind when talking about how we might deliver early learning to young children.

I think two critical things can be done at the Federal level, one is to make available demonstration sites for both those who are operating preschool environments and others K to 12 to let them really understand how do you use these technologies appropriately, and so that whether it be a computer-based device or a video program they know how to integrate that effectively into their classroom.

Also, that we need to provide some incentives perhaps for those schools who are running our Nation's teacher training programs for them to place a little bit more focus on how to best include technology in the classroom and how they might use it to do some things differently.

If you solve the last-mile problem and you do not look at addressing those issues you will have the large pipe that does not have much going through it because of the fact that the faculty do not know what is there, and I think that the NTIA initiative to look at what might be a conceptual design for this network is extremely appropriate, and also making sure folks know what is there is appropriate.

So, I think that tackling the training and the consumer side will also help create a demand and also for that demand to be articulated a little bit more explicitly from the educational community as to what kind of programming, and therefore what kind of technology, is best situated, and I also think that the work of PBS and others to bring interactivity whether it be to an individual third-grader at home and his mother, or at a day-care center, that they can somehow participate in the learning process is extremely critical.

Senator BINGAMAN. Mr. Hendricks, did you have a comment on this?

Mr. HENDRICKS. Yes. After having lived through it for 10 years, the development of an educational channel on cable television, I am convinced that the challenge here is not one of increased distribution capacity, it is one of dollars per channel.

At present there is not a problem, for instance, in the distribution of ready-to-learn, the Carnegie Project. In fact we have already offered to Ernie Boyer to distribute ready-to-learn as a 3-hour initial block on the Learning Channel—a block that could be expanded later either on the Learning Channel or a new channel that we might start, perhaps in cooperation with PBS. So, the channels of distribution are there.

The problem is the quality of programming that is offered. To do a good job you have to spend enormous sums of money. When we acquired The Learning Channel, the reason that the channel had not developed over time was that their funding for the channel—for their programming—was only about \$2 million a year, and that was last year when we acquired it. What we are doing is building that funding base up to around \$20 million, and so that is the challenge.

One of the ironies is that there are plenty of educational access channels and I was disappointed—so disappointed in 1983, a year after I incorporated the Discovery Channel—when I learned that

educational access channels were controlled not by the cable operator but by local franchise authorities and school boards, and so I had hoped to be able to get our service, an educational service, on cable through that means.

So, I think the approach is not to dedicate even more educational capacity but to try to give the cable operators some flexibility—increased flexibility to use those local educational access channels. So, the challenge is funding per channel, and not developing more channels. It will just fragment all of our efforts.

Senator BINGAMAN. Did you have a comment, Mr. Miller?

Mr. HOWARD MILLER. Yes, I have several comments. First, I do not see anything wrong with the local community deciding what educational needs are for its students. I believe our challenge is to try to make sure that those capabilities are at the school and in fact into the classroom.

I believe it has to start with the appropriate equipment so that they can get access to these programs, whether they be created at the school, the next school, or the public television station in the community, or whether they are a national service.

I do believe that we are witnessing a watershed event in public television because I believe we have broken the barrier of cost for distribution. In Kentucky, for example, there are attempts to work out two-way interactivity. They work fairly well, but the cost for the telephone connections to allow the students to communicate with the teacher, those costs exceeded the cost of the programming itself.

We now have a system that can deliver all of these data and voice services at essentially no cost anywhere in the country, and so in my opinion we have an opportunity where more and more students, given the opportunity, will sign up for these courses. When they do sign up to the courses the money will be available to create more courses.

So, I believe we are at the beginning of a dramatic expansion of video and data based education in this country. The critical issue is how do we get enough equipment into the schools and access into the schools so that every student has an opportunity to take advantage of this.

Remember the satellite, if nothing else. If we have to use satellite dishes because there is not a cable operator there or someone else, we can do that. We can do it fairly inexpensively. We can get access to every single classroom in this country, including Hawaii through the Virgin Islands, if we choose to do so.

Senator BINGAMAN. Thank you very much, Mr. Chairman.

Senator INOUE. Thank you, sir. Senator Stevens, do you have any questions?

OPENING STATEMENT OF SENATOR STEVENS

Senator STEVENS. Mr. Chairman, I do not have any questions. I would like you to indulge me to make a statement here for just a few minutes.

I am sorry to say that I have a schedule that prevents me from staying through the balance of the hearing today, and I am very much interested in S. 1200 and I wanted to state for the committee and the record why that is the case.

I believe that this subcommittee really is the caretaker of a gigantic Mongolian hotpot of communications now. It has a printed media level, it has an air radio television level, it has cable, it has telephones and video, motion picture, wireless cable, direct satellite delivery.

We have created situations where newspapers can get into cable in their service area, magazine publishing, movie production, telephone service in their service area, but they cannot get into broadcasting in their service area.

Telephones can get into newspapers in their service areas, broadcasting in their service area, movie production and magazine publishing. They cannot get into cable in their service area except on a common carrier basis without editorial content.

Cable can get into newspapers in their service area, movie production, magazine publication—Time-Warner owns magazines Cable and Movie Production—but cable cannot get into broadcasting in their service area or common carrier local telephone service in their service area, but they can own telephone-like private bypass services in their service area. TCI has invested in private telephone service in New York that bypasses local exchanges.

My point to you is I think that even the things that Senator Bingaman is raising now are really part of what we ought to be exploring on a broad national basis for what we should do to deal with the Communications Act that should govern the 21st century.

We have in this gigantic Mongolian hotpot it has a lid on it, and underneath it there is a fantastic increase in demand and the lid is going to come off and most people here are asking us to keep the lid on for their particular kind of service.

Now, I think we are harming the public. We must think anew about our communications capabilities and about the policies that have been established by this Congress. What should we be giving incentives to? I think, for instance, no one has a greater demand for the kind of services that Senator Bingaman has addressed his amendment to than my State.

On the other hand, we are not going to get that if it is dependent upon Federal expenditures. We have to get it through the common system that is available to the public at large, and I think that is going to come with things like Mr. Hendricks' Discovery Channel extended out in some areas by expenditures of our own State. Where we do not have enough demand to justify extending cable out into an area, our State has created a system, as you know, which we call Ruralsat.

Now, when we deal with these subjects on a piecemeal basis—and I congratulate you for holding the hearing. I congratulate my colleague from Montana for his and Senator Gore's proposal that is before the committee today, but I would like the subcommittee to consider, really, some national hearings on what we ought to do for a Communications Act that will take us into the 21st century.

We allow technology to come out of the top of that pot and allow the demand to be answered, but in a way that will not stifle development for the future, and everything I am seeing now, as I said, in terms of these what people can and cannot do, the cans provide access for many people to increase communications.

In my judgment, it is the cannot-do portions of the Communications Act today that ought to be examined, because we really ought to have the demand capability, we ought to have the ability to recognize the tumbling technology in this communications field and put it to work so that we will once again regain the position of being No. 1 in the world in this whole area. I do not see we can do it with some of these suggestions that are being made that would limit access from one portion of the industry into another portion. I think we really must find a way to open it up.

Thank you, and I am sorry I must leave.

Senator INOUE. Senator Stevens, before you leave I would like to say that I welcome that statement very much. For a long time I have advocated that this subcommittee should become a full committee because of its importance in our Nation's well-being.

This subcommittee was created at a time when most Americans received radio signals through crystal sets. There were no satellites, no television, and I think since then, as Senator Stevens pointed out, we have got this Mongolian hotpot, and that makes me the Mongolian czar. [Laughter.]

Senator Pressler.

OPENING STATEMENT OF SENATOR PRESSLER

Senator PRESSLER. Thank you, Mr. Chairman. Mr. Chairman, I want to place my statement regarding distance learning—I am going to give just a little bit of it—in the record. I shall be fairly brief.

I want to thank you for holding this hearing. I look forward to working with you in the future on the topic of distance learning. I want to thank this fine panel.

Last month I included an amendment to S. 2, the Neighborhood School Improvement Act. This amendment directs the administration to conduct a comprehensive study of the benefits distance learning would bring to both private and public education.

As you know, Mr. Chairman, distance learning is the use of communication infrastructure to give educators and students access to information from any location. I believe distance learning will soon revolutionize the way we educate our children.

Advances in communication technology soon will allow educators to fully utilize this network to assess a new and exciting world of educational resources—satellites, telephone lines, computers, and data bases are among the tools educators will soon use to instruct their students. My amendment will help facilitate this educational revolution.

This legislation outlined congressional findings regarding distance learning. It recognized that the key to success in distance learning is teachers. We further recognized that distance learning will not replace the teacher. Rather, it will be an enhanced tool for them.

Second, this amendment directs the Secretary of Education in consultation with the Secretary of Commerce to conduct a study of three issues involved in implementing distance learning. First, the study would examine the incentives necessary for telecommunications common carriers to develop special pricing for distance learning projects. Second, the study would address the desirability

of Federal Communications Commission allocation of spectrum in order to encourage the development of distance learning technologies.

At the forefront of the distance learning movement in the United States is the U.S. Distance Learning Association. I worked closely with this group of educators and communication leaders in crafting my legislation. I would ask unanimous consent to include in the record a copy of the USDLA's national policy recommendations, a copy of my legislation, and other materials. Many provisions of this amendment come from USDLA's policy recommendations recently adopted at its National Policy Forum.

Mr. Chairman, I look forward to working with you to formulate telecommunications policy to assist the U.S. ability to educate future generations of American students. I thank you and the other Senators and the witnesses.

Senator INOUE. Without objection, the documents will be made a part of the record.

[The information referred to follows:]

[Communication Daily, Vol. 12, No. 17, January 27, 1992]

Senate has added distance-learning amendment sponsored by Sen. Pressler (R-S.D.) to Neighborhood Schools Improvement Act (S-2), legislation being considered before cable bill (S-12). Amendment also would direct Education and Commerce Depts. to conduct study of distance learning, examining, among other issues: (1) Whether incentives are necessary for telecommunications common carriers to develop special pricing for distance learning projects. (2) Whether FCC should allocate spectrum to encourage distance learning development. (3) Whether copyright laws need to be changed. Study would be due 210 days after enactment. Explaining bill to Senate, Pressler said he thought distance learning "will soon revolutionize the way we educate our children," with satellites, telephone lines, computers and data bases among tools educators will use. Amendment would make official finding that distance learning can offer alternatives to school closings and help overcome shortages in math, sciences and other fields while recognizing need for teacher training.

AMENDMENT NO. —; Calendar No. —

Purpose: To provide for studies regarding distance learning.

IN THE SENATE OF THE UNITED STATES 102D CONG., 2ND SESS.

S. 2

To promote the achievement of National Education Goals, to establish a National Council on Educational Goals and an Academic Report Card to measure progress on the goals, and to promote literacy in the United States, and for the purposes.

AMENDMENTS proposed by Mr. Pressler Viz:

On page 56, between lines 19 and 20, insert the following:

TITLE III—DISTANCE LEARNING

SEC. 301. DISTANCE LEARNING FINDINGS.

Congress finds that,

- (1) distance learning technology can provide rural schools with interactive video capacity;
- (2) distance learning can provide instruction in required or advanced, specialized courses in schools where teachers are not available or too costly to provide for a limited number of students;
- (3) the rapid development of telecommunications technology has resulted in distance learning systems that are powerful, flexible and increasingly affordable;
- (4) distance learning can offer an alternative to school closing or consolidation and help rural and urban schools satisfy their educational mandate;

(5) distance learning can help urban school districts overcome shortages in qualified teachers in subjects such as mathematics, advanced sciences, and languages;

(6) the key to success in distance learning is teachers and the use of distance learning is meant to be an enhanced educational tool for them;

(7) teachers must have training, preparation, and institutional support to teach successfully using distance learning technology;

(8) teacher accreditation associations need to encourage the use of distance learning technologies;

(9) federal and state governments can promote distance learning projects by helping reduce the costs of necessary telecommunications services;

(10) because many educational needs parallel the needs of business, government, and health care providers, there should be ample opportunity to share the costs associated with research and development used in delivering this new method of teaching;

(11) distance learning technology can increase contributions to the goals of "America 2000", as established by the President;

(12) the federal government can encourage states to resolve contentious issues that are barriers to the use of distance learning, such as teacher certification and evaluation, and curriculum and textbook standardization;

(13) federal funds now devoted to delivering educational services should include distance learning where it is cost effective;

(14) the Department of Education and the National Science Foundation should consider establishing demonstration sites for distance learning;

(15) distance learning is a growing force in private and public education; and states, localities, the federal government, and the private sector, all have a role in developing and implementing this education delivery system.

SEC. 302. DISTANCE LEARNING POLICY STUDY.

a. **STUDY.**—The Secretary of Education in consultation with the Secretary of Commerce shall conduct a study of the issues involved in implementing distance learning. The study shall, among other issues, address—

1. the incentives necessary for telecommunications common carriers to develop special pricing for distance learning projects;
2. the desirability of Federal Communication Commission allocation of spectrum in order to encourage the development of distance learning technologies;
3. the need to amend copyrights laws to encourage development of distance learning technologies.

b. **COMPLETION DATE AND REPORT.**—

1. **Completion Date.**—The study described in subsection (a) shall be completed no later than 210 days after enactment of this Act.

2. **Report.**—No later than 30 days after the completion of the study described in subsection (a), the study and an executive summary shall be transmitted to the Committee on Education and Labor, the Committee on Energy and Commerce, and the Committee on the Judiciary, of the United States House of Representatives; and the Committee on Commerce, Science, and Transportation, Committee on the Judiciary, and the Committee on Labor and Human Resources, of the United States Senate.

SEC. 303. DEFINITION.

The term "distance learning" means the transmission of educational or instructional information to geographically dispersed individuals and groups via telecommunications.

On page 56, line 20, strike "TITLE III" and insert "TITLE IV".

On page 56, line 21, strike "301" and insert "401".

On page 2, after item relating to section 212, insert the following:

TITLE III—DISTANCE LEARNING

Sec.301. Distance learning study.

Sec.302. Distance learning policy study.

Sec.303. Definition.

On page 2, redesignate the item relating to "TITLE III" as the item relating to "TITLE IV".

On page 2, redesignate the item relating to section "301" as the item relating to section "401".

Senator INOUE. In a way gentlemen, since becoming chairman of this subcommittee, I have made it a point to spend at least 12 hours each week watching programs that I do not wish to watch, but I think it is part of my work, and I have done my best to concentrate on what would be considered educational or instructional, and I find it difficult to believe that people actually turn on certain channels to watch some of these programs.

As you pointed out, Mr. Hendricks, we would be wasting a lot of money. It is almost criminal to waste the channel and not have something that would attract viewers. I do not see how they are going to attract viewers. Now your programs are right down my line. I like that, I like nature programs, they are very instructional. It is well presented, it is fun, but what sort of viewers do you people experience in your instructional-type programs?

For example, we have programs run by, and where I come from, the Montgomery College. For the life of me, unless I am forced to get a credit, I will not watch those programs.

Mr. HENDRICKS. Senator, that is a very frustrating situation for us in Montgomery County on cable. There are five channels which the local franchise authority has dedicated to educational access, two for use by Montgomery County public schools, two for the University of Maryland, and one for Montgomery College. The problem is the expenditure per channel which, I would bet, is probably \$10,000 to \$15,000 a year, and like I said, to develop a watchable, useful service requires an expenditure in the millions.

On Discovery we will spend this year right around \$110 million on the programming operations of the Discovery Channel, and another \$20 million on the operations of the Learning Channel, and so the challenge is trying to get millions of dollars behind one channel so that you can really develop a service that is of use. That is what we are trying to do, to develop a service that educators can use as a learning channel, that is watchable; because if it is not watchable, it is not going to have student viewership, and without viewership there will be no impact.

Because of the required educational access channel dedication, the Learning Channel is hindered in its distribution today. We are only in 16 million out of 57 million cable households, so it is a great irony that those educational access channels prevent the further distribution of the Learning Channel, and the Mind Extension University, which is the Distance Learning Network, and so that is why we have to oppose setting aside another group of channels called instructional.

Again, that will bar our further advance, and the advances, perhaps, of other services.

Senator INOUE. Do you have any comments?

Mr. HARRY MILLER. Yes. I think it is very appropriate that when you talk about expenditure for channels and you think of basically broadcast programming which is not interactive, if that is not extremely well done, it will not be entertaining as well as educational, and people will turn it off. That is why we have asked that the committee consider the interactive nature of this technology, so that two-way video and audio communications becomes possible, because now local communities can band together.

Perhaps an exceptionally good preschool teacher or day-care operator who is running an exercise with math manipulatives can have that received at four or five other regional local centers, where those students can, in fact, interact with the instructor and they are not passive watchers who are turned off. They are engaged watchers, because they are involved in the programming.

We have seen this happen in Vermont with professionals teaching students remotely, and those students are extremely engaged because of the interactive nature. It is also why our recommendation suggests that whatever broadband mechanism, and there are many, that can be delivered the last mile, that it be available on a common-carrier basis so that the person who is receiving the instruction has a choice of where they would like that instruction to come from.

It might be a programmed offering where largely the participation is noninteractive, or it might be a very highly interactive program with students from another school, students interacting from Vermont, students in Los Angeles, which I think students would find to be tremendously engaging, stimulating, and would keep them involved discussing something with a group of folks they know nothing about.

Mr. HOWARD MILLER. I have a couple of comments. We are at the very beginning of a new era of education. The people at the local level obviously have a great deal to learn from the people who do it nationally. We have already recognized that it takes a different type of teacher, teaching on television, than a typical classroom teacher. The attributes are somewhat different, in order to make it entertaining. Interactive capabilities will obviously help.

I would again, however, caution that it is always easy to say, "Well, we are big and we are national, therefore, we can do it better." I do not think that is necessarily true. I believe it is a combination of local and national, and I would be the last to argue that we should somehow displace local needs with national services. This is not a country that is absolutely the same. There are different local attributes that need to be enhanced, not diminished, therefore, I think we need to help these people to do a better job if there is a problem, not displace them.

Mr. BRUGGER. Our 35 years of experience has shown us that we need to have working out of our stations utilization specialists who work with schools and curriculum specialists, and most of our programs are developed with the education community to design courses specifically the teachers want to use. It has to do with timing, it has to do with presentation of materials, the kind of access to the video technology that they want to use, the computer backup and the networking for teachers.

We have teacher training institutes now so that we can train teachers in how to use the technology, and again, building on what Howard said, that that has to do a lot with the local community and what they want to do. The whole SERC project is done on a cooperative relationship with the chief State school officers to make sure that what we are doing fits the curriculum needs of that State and the school districts in that State.

Senator INOUE. Thank you for joining us this morning. I would like to continue this dialog because I consider this a very, very im-

portant area. As Mr. Hendricks has suggested, we have been mis-using our channels. I have looked into the way these channels are used in other countries, and I can understand why they statistically are a bit better than our children, and so we will continue, and as I suggested earlier, we will be having a series of hearings, just on this area, on education. So, this is just the first, and Senator Bingaman, you have opened up the Mongolian pot, I think.

Senator BINGAMAN. Well, Mr. Chairman, I let me again thank you for allowing this testimony this morning, and I do applaud your efforts in this area and want to continue working with you to encourage more attention to this. I think it is very important. Thank you again for allowing me to participate.

Senator INOUE. Thank you. I thank you all very much. Now may I call on Senator Conrad Burns of Montana, the distinguished author of S. 1200, and I have asked him to prepare the list of witnesses, and we have three panels, I believe. Before I do, may I make a statement, Senator?

We now turn to the portion of this hearing, concerning S. 1200, the Communication Competitiveness and Infrastructure Modernization Act. As I stated earlier, the issues surrounding the telecommunications network are of critical importance to this Nation. Students, health care professionals, scientists, businesses, and consumers could benefit greatly from an enhanced national broadband telecommunications network.

Congress has a responsibility to ensure that all consumers, rich and poor, urban and rural, have equal access to the most sophisticated telecommunications services that are available. While there is general consensus about the need to upgrade the infrastructure, a number of questions are yet to be resolved. One question is how much it will cost to install such a broadband network to the home. According to some estimates, laying fiber-optic cables in every home in the United States could cost from \$200 to \$400 million. This investment could add from \$10 to \$20 to each consumer telephone bill every month for the next 20 years.

Before Congress embarks on an active crusade to lay a fiber-optic cable to every home, we must determine whether consumers are willing to pay for this new technology. If we determine that the construction of a broadband network is a national goal, we next need to determine how to reach this goal. The bill introduced by Senator Burns contains two proposals that he believes will encourage the development of this technology.

First, S. 1200 proposes to lift the cable telephone crossownership restriction. Second, the bill would require the telephone companies to file plans to lay fiber-optic cables to every home by the year 2015, but both of these requirements raise a few questions. The cable-telephone crossownership restriction has been considered by this committee for several years, and obviously is very controversial.

Senator Burns offered a similar proposal in the 101st Congress, and we adopted a revised version of that bill that included a video dial-tone proposal, and called for a study to determine whether the restriction would be lifted completely. That revised version was not brought to the floor of the Senate. I continue to believe that the video dial-tone proposal would provide enormous benefits to the

public. This concept which was first proposed by the current Chairman of the FCC, Mr. Sikes, would permit the telephone companies to carry video traffic on a common-carrier basis.

Permitting the telephone companies to carry video-traffic generated by others on nondiscriminatory basis would give the telephone companies great incentive to lay fiber-optic cables in the network, and I applaud Senator Burns for including this video dial-tone proposal in this bill, S. 1200. I must say, however, that I am yet unconvinced that it is necessary to the next step and let the telephone companies enter the programming market as this bill proposes.

I am certain that benefits could be achieved by removing this programming restriction when compared to the possible risk of anticompetitive behavior and cross-subsidization. I also understand that this is a difficult issue and I am willing to listen to the testimony this morning, and continue to explore this issue.

This bill also calls for the telephone companies to lay fiber-optic cable to all homes by the year 2015. While, I appreciate this, I have several questions concerning the wisdom of enacting legislation to implement a certain technology. It is clear to me that the telephone companies are laying fiber-optic cable today, because it is economic to do so. I generally believe that the Government should interfere in the marketplace only where it is demonstrated that the market has failed. So, I will examine the testimony this morning to determine whether the failure of the market justifies strong legislative action.

So, I would like to thank my colleague, Senator Burns, for raising this issue before the committee, and it is your show, sir.

Senator BURNS. Thank you, Mr. Chairman. I want to thank you up front for scheduling these hearings and airing what I think is probably one of the most important issues there is before our country today as far as policy in the telecommunications industry.

We are honored today to have Senator Dole with us, because of his time restraints and everything else, I would ask your permission that he might make his statement first, then I will have a statement after him.

Senator INOUE. It is always a pleasure and a great honor and privilege to have with us the distinguished leader, Senator Dole.

STATEMENT OF HON. ROBERT DOLE, U.S. SENATOR FROM KANSAS

Senator DOLE. Thank you, Mr. Chairman. I appreciate Senator Burns letting me make my statement. I do have a 10:30 meeting, so I appreciate it very much.

I want to, first of all, commend the chairman. I have listened to part of his statement. I think this is an important issue and is controversial, and I think the fact that the chairman is willing to proceed with these hearings with an open mind is certainly encouraging. As the original cosponsor of S. 1200, the Communication Competitiveness and Infrastructure Modernization Act, I am certainly pleased to have this chance to present my views.

First I would like commend my friend from Montana, Senator Burns, for his leadership on this, and a host of other telecommunications issues. Diehard determination is probably not too strong a

phrase to describe his efforts to bring this initiative before the committee and the Senate. I am tempted to call this bill "visionary," but that is not quite right, because the facts are plain to see for those who want to look.

I would call it "futuristic," except in this case, the future is now. Let us face it, these technologies are going to be developed and fiber-optic pathways are going to be laid out. It is happening now. The question is, can this be done in a way that benefits the already advantaged, the so-called information rich, major corporations that can afford to pay for the latest edge in making money, or will we provide incentives to bring this technology to all Americans, especially those to whom it can make the biggest difference, rural Americans, inner-city Americans, and Americans with disabilities.

Mr. Chairman, we cannot risk the creation of information-age haves and have-nots. The bill is about ensuring that opportunity. I am especially interested in the benefits that a comprehensive privately created broadband network would bring to our citizens in rural communities, and in the resources and hope it can provide to many Americans with disabilities.

This technology can and does make a difference, Mr. Chairman. My own State of Kansas is a leader in attempting to apply telecommunications for distance learning so that we close gaps in the curriculum instead of schools. In Kansas right now, more than 60 rural communities are linked together by 8 interactive video clusters. These programs help revitalize rural American by bringing our students educational opportunities necessary to keep them competitive on a national and international level.

I will not detail for you the list of courses, classes, and activities, like the capacity of optical fiber, it is almost limitless. An interactive video in real communities can save lives. Kansas is also a pioneer in remote diagnosis technology using two-way high-resolution video. Rural examination sites are being linked up with the University of Kansas Medical Center, and patients will have the instant expertise of a specialist without spending long hours driving. Another example about how information pathways are replacing our highways.

Broadband networks bring with them the wider availability of special telecommunications, services for the disabled such as TTD for the hearing-impaired. In addition, for those limited in their ability to get out to a job or worksite, fiber expands the range of telecommuting, bring the worksite to them. This bill requires that these vital services in these underserved areas be a priority.

Meeting these needs would be a precondition for a provider's entry into numerous profitable lines of telecommunications business. Finally, let us point out what this bill is not. It is not a telco bill, or a cable bill, or a satellite bill. This bill means to provide incentives to whatever service provider is willing to invest to make these benefits available.

If I would suggest anything to my colleagues on this committee, it is that the legislation be clarified and strengthened on that point. Too often these initiatives are treated as stakes in some zero-sum game between lobbies for various competing industry segments, and that is not what I am interested in. That is not, I think,

what this committee is interested in, and that is not what this bill is all about. This bill is an effort to help ensure that America is not left behind, that it is ready for a globally competitive future, and that the future belongs to all Americans.

Mr. Chairman, I thank the committee very much, and I thank my colleague, Senator Burns, for inviting me to appear.

Senator INOUE. Thank you very much, Mr. Leader. Your words will be very studied and listened to by the committee.

May I call upon Senator Burns?

OPENING STATEMENT OF SENATOR BURNS

Senator BURNS. I want to thank you, Mr. Chairman, and I want to thank Senator Dole from Kansas, our leader, for his words this morning.

Mr. Chairman, on October 4, 1957, Sputnik I was launched. The United States was stunned by the news that the Soviet Union was the first country to reach into space. With our technological superiority in doubt, Americans both in and out of public life felt the shock, took stock, and reacted. We, as a Nation, focused our national being on space. By May 1961, Alan Shepard was launched into space. By February 1962, our colleague, Senator Glenn, orbited the Earth, and by 1969, Neil Armstrong walked on the moon. Today, we are unequalled in space exploration.

In the 1930's, this country was in the depth of a depression. During this decade war was waged in both Europe and Asia, but the United States did little to prepare itself. On December 7, 1941, the Japanese attacked Pearl Harbor. The United States reacted, building a technologically superior force, culminating in the use in 1945 of the most devastating weapon ever devised by man, the atom bomb.

In 1948, the cold war, the Iron Curtain, a superpower was expanding both by force and economically in a way that threatened the world. The United States responded, wavered in its resolve in the 1970's, but rededicated itself to the task again in the 1980's of developing and building a technologically advanced military machine. And with communications technology, breaking the down the geological barriers, the Iron Curtain came down.

In August 1990, Saddam Hussein invaded Kuwait. In January 1991, when he refused to withdraw, the United States reacted. Rallying other free nations, the United States led the response with the greatest display of high-technology weaponry ever used in modern warfare, stealth fighters, smart bombs, patriot missiles, M1-A1 tanks. American technology dominated the warfare.

Americans applied their creativity and their expertise, and again the world acknowledged us as No. 1. In each of these cases, America was challenged, and in each, we met the challenge with technology. In each case, we were at one time behind the competition, and each time we rallied as a Nation, we prevailed. In each case, we set aside partisan and philosophical differences and, with unity of purpose, took on the task with the combined weight of Government and industry. And oh, what a power we have when we channel and direct our energy, and creativity on a single goal.

Today, America is again being challenged. The battle is more confusing, the opposition more obscure, but the threat is more

veiled. At stake, our economic lives, and as a Nation, we need the same measure of response as in the past. The competitive edge, is America losing it? The American people sense this and do not quite know the cause or the cure. Our job, as their elected officials, is to dedicate our minds and efforts to the task of marshalling our forces, not responding to polls or pressures, but leading the way. We are being challenged as a Nation, and we must react as a Nation with unity of purpose.

Now, I am no economist, but I would like to think I have been given some plain old American common sense, and I have tried to think this through, not from a conservative or liberal point of view, but just as a person like you, who has been sent here to work with others to solve some common problems. There are some basic truths here that we can all agree on.

First, we know what is happening. We are a creative people, the most creative in the world, and we have a system of government that allows ideas to flourish. We have no shortage of technological advancements; we just have not converted them all into benefits. Others, such as Japan, take many of our ideas, apply them, manufacture the product based on these ideas, and sell those products to us and to the rest of the world.

Second, technology is the future. We are the generation that has seen this explosion right in front of our eyes: television, automobiles, and airplanes. The list goes on and on. All have improved our standard of living. The country that invents, produces, and sells, that country will prosper. Labor and capital, coupled with American ideas create wealth for every one of us.

In the past, challenges that I have described, applying technology, whether it is nuclear energy, space travel, exploration, aircraft, or communications, not only invigorated the industries directly involved, but also led to a rash of new products and companies from resulting technological advances.

Third, communications technology is one of the ways, if not the wave of the future. Obviously, there are other areas where technology is important—energy, aircraft, space, transportation, and health, just to name a few. But communications is certainly one way where the technological revolution is coming.

Fourth, competition is what got us where we are today, still the leading industrial nation of the world. Other systems have disintegrated and they are disgraced in failure. We cannot lose faith at this point in everything that we have created that has created also our success. There is an old saying, we have got to dance with what brung us.

Finally, Government regulation has its place—to prevent abuses in the marketplace, public health, safety, the environment, and so on—but it should not be used simply to protect market shares or market niches, or to keep people out, or hold them down.

These are the truths that I think we can agree on, and we can all acknowledge at this table, and there are principles that I used in working with Senator Gore, to put together the bill that is before us today.

This bill sets the sights of this Nation high in the critical area of communications technology, and it says we must set goals to meet the competition and to unleash the full force of America's

competitive energy. What are our competitors doing? Well, they are racing to develop communications technologies that they in turn will sell not only to us, but to the rest of the world.

Japan has a plan to construct a nationwide broadband network by year 2015. By constructing the network, Japan intends to apply and develop what is essentially American technology. If they win the race it will be come the principal producer and seller of that technology. Moreover, Japan's businesses, their students, and employees will be the beneficiaries of a tremendous service which will be carried over a broadband network.

At present rates of deployment, we will not have a similar nationwide network in this country until 2030 or 2040. America simply cannot afford to allow that to happen. Will American industry move less rapidly than other countries? Why will they do that? Because of regulatory restraints which prevent American technology or American telephone companies from writing off obsolete technology and making full use of modern broadband technology.

These restrictions dampen the investment needed to deploy broadband systems as fast as demand would want. America has to focus its vision. We have to concentrate our efforts, both Government and private sector, on being the best in the communications field, whether we are fighting to stay on top or to get back on top. It is a tough battle, and it is not going to get any easier.

The most foolish thing we can do is to put our country at a disadvantage by imposing restrictions and regulations that would hold back our industry, especially those restrictions which are designed primarily to keep competitors out of the market. Do we believe in this system or not? We, as Congress, have to give direction. We have to help set the goal and the parameters. That is what Senator Gore and I have tried to do in S. 1200.

S. 1200's goal is the construction by the year 2015 of a broadband communications system for every business, every home, hospital, clinic, school, and library in the Nation. We do not provide Government subsidies; we simply remove regulatory restrictions which are holding back the deployment. We remove the prohibition for telephone companies to provide video programming. Under S. 1200, the Nation will enter into a social compact with the telephone companies, similar to the compact that was made at the turn of the century, when the concept of universal telephone service was adopted.

In return for the removal of restrictions, telephone companies will provide to their respective State public utility commissions plans showing how each company will meet the 2015 deadline. Just as with universal telephone service, the public will be guaranteed that the goal of enhanced broadband services will indeed be a reality for every American.

In removing these restrictions and implementing the more rapid deployment of fiber, Senator Gore and I have dealt with all the reasonable objections and concerns of competitors and consumers. We have worked hard to address those concerns of newspapers, broadcasters, and cable operators. We have built in safeguards to ensure that the telephone companies are not granted favored status, that ratepayers will not subsidize telephone companies' commercial ventures into video programming, that other competitors will not be

disadvantaged or harmed in any way, and that the public will have equal access to the system to provide and receive a myriad of services.

The detractors of this bill, who fear potential competition, argue that telephone companies cannot be trusted, that telcos will use the system to their own advantage against the interests of their competitors, and that several examples of abuses should disqualify telcos from competing at all.

The opponents' arguments fail. Telephone companies are the most closely regulated and scrutinized businesses in the country. Regulatory safeguards have worked, and will work even better in the future with more computerized auditing.

But most importantly, the safeguards in this bill will work because we have included what the Washington Post has called severe penalties. In fact, we have the most severe, unprecedented, far-reaching sanction: the death penalty. If a telephone company willfully and repeatedly violates the safeguards, the FCC can and should divest the company of its video programming subsidiary. The risk of engaging an anticompetitive behavior will far outweigh the potential gain from violating the rules.

In addition to these strong safeguards, they require the telephone companies doing their own programming, must carry the local over-the-air broadcasters on a system at no charge, thus guaranteeing broadcasters entry to the home by over-the-air, by cable, and by telephone. We do not simply encourage competition by telcos and other businesses; we encourage others to compete in local telephone service.

Competition with strict safeguards to ensure fair and equal access and competition is the objective of every provision in this bill. In this upgrading of universal service to include video channels, we have been mindful of the distinction between cable and telephone companies. Cable is not a common carrier. It does not have to provide access to you or me or a newspaper or anyone else.

This bill, although it will permit telephone companies to carry their own video programming, would also require them to make most of their video channels available to the public on a commercial basis as a common carrier. Therefore, the argument of newspapers that telephone companies will control all the information to the public, that is absurd. S. 1200 will create far more diversity in the exchange of information than exists today.

Moreover, at adding video to the swift network is incredibly important. This network would have the potential to carry voice, high-speed data, full-motion graphics, and video between any two users anywhere. That is where the potential for education, health care, job training, and business becomes so enormous.

I want you to see a videotape, because the best way I know how to show you how I feel about this, I would like to show it to you at this time.

[A videotape was shown.]

Senator BURNS. Thank you, Mr. Chairman. I feel very strongly about this. I really do. And I appreciate your patience for such a long statement this morning and you holding this hearing. Thank you very much, and I apologize to the rest of the Members for taking so long, too.

Senator INOUE. No, it is a very important subject matter, and so I am glad that you were able to spend this time.

Senator PRESSLER, would you care to make an opening statement?

Senator PRESSLER. Mr. Chairman, I shall summarize very much my opening statement. I do want to place in the record George Gilder's article, "Into the Telecosm," which was in the Harvard Business Review.

Senator INOUE. Without objection.

["Into the Telecosm," by George Gilder, in the Harvard Business Review, vol. 69, No. 2, March-April 1991, may be found in the subcommittee's files.]

Senator PRESSLER. And one or two other items. I want to thank Senator Burns and Senator Gore and others for all their personal work on this issue. Through a policy mix of Government regulation and free market incentives, America possesses the finest communications network in the world. However, I believe computers and fiber optics will soon force Congress to consider the definition of what is meant by an "advanced communication network."

Developments in microchip and transistor technology soon will merge the telephone, computer, and televisions into one telecomputer. In a burst of light, telecomputers will receive a high-definition video package, store it digitally, and replay it any time. Whether it is a lecture on 19th century English history, a demonstration on diesel engine mechanics, or an active adventure movie, viewers will watch what they want and when they want. No longer will entertainment be a passive activity.

While our current infrastructure of copper wiring cannot channel this flood of information, a seamless fiber optic infrastructure could. The information transmitted by photons over fiber optic networks instead of electrons over copper wires will give people the ability to access and control unprecedented amounts of information and images.

A person living in Sioux Falls, SD, would be able to telecommunicate over a lightweight network to his job in Chicago, where he would talk face to face with his coworkers and have immediate access to documents over a high-definition telecommunication screen.

A classroom in Cheyenne, WY, could attend a physics course in Kansas City with the professor lecturing, writing on the chalkboard and answering questions over a high-definition flat screen TV.

Linked by telecommunicators, a doctor examining a patient in a rural hospital could consult with a heart specialist in Los Angeles while accessing data bases at Johns Hopkins Hospital.

I realize that some may argue that the marketplace does not want or need the information services that could be provided if fiber optics reached into every home. Currently, this may be true. However, once fiber optic networks become a reality, I believe the marketplace will realize their potential and begin to develop and demand for many new information services.

The demand for new services will further encourage the completion of the network. We need to ensure that a fiber optic network capable of voice, data, and video transmission does not allow a telephone company to eliminate competitors in all information fields.

I do believe that progress is in technology and will help allay these fears. If the deployment of fiber optics will do anything, it would encourage competition. If the limited amount of information that can flow over copper lines, that gives telephone companies control over information.

I have mentioned Mr. Gilder's article. Mr. Gilder likens the limited amount of information copper wire can carry to the limited amount of cargo fixed railroad lines can transport.

Transportation technology progressed with the development of a national infrastructure of paved roads and interstate highways, thus eliminating the transportation monopoly of railroad interests and enabling millions of cars and trucks to compete.

Comparably, the limitless capacity of fiber optics would give all information service providers unlimited capability to reach consumers and vice versa. Lightwave networks would not further entrench a monopoly. Rather they would unleash numerous opportunities for entrepreneurs. The resulting competition in voice, data, and video services would immediately benefit consumers.

Mr. Chairman, I am pleased that we will be addressing how best to achieve this revolution in information exchange. I look forward to hearing from today's witnesses.

Senator INOUE. Thank you.

Senator Packwood.

Senator PACKWOOD. No statement, Mr. Chairman.

Senator INOUE. Thank you.

May I now call upon the coauthor of this measure, Senator Gore?

OPENING STATEMENT OF SENATOR GORE

Senator GORE. Thank you, Mr. Chairman. I have never worked with a chairman who is more patient and more accommodating to the committee. I appreciate the chance to work with you. And I am pleased that we have finally been able to schedule a hearing on this very important issue.

The floor debate on cable legislation occupied the committee's resources for several months, and we are all extremely pleased that S. 12 is behind us, at least for now.

And it is worth mentioning that without your leadership, Mr. Chairman, that bill would never have gained momentum. In this area of the law, which is so complicated by the new developments in technology, we are extremely fortunate to have your leadership.

I want to thank Senator Burns also for his obvious careful preparation, his dedication, and his continuing work on the legislation before us today. He has been tireless in building a comprehensive case for easing the cable telco crossownership restrictions, and I am pleased to be the cosponsor of this initiative and to have the chance to work with him.

This legislation is, I believe, as compelling as the debate on S. 12. Certainly the pace at which this country modernizes its telecommunications network is critical, not only to the cable television consumer but to the entire U.S. economy.

In this respect, I was extremely pleased that the President, last November, signed into law the High Performance Computing Act. This is a measure which I initiated almost 12 years ago and with

the help of the chairman and my colleagues on both sides of the aisle in this committee, was finally able to pass.

What that bill did was essentially create an interstate highway—an interstate system of information superhighways. The debate today is about how fast we will be able to move from those interstates into the city streets and the rural roads. That is really what this is all about.

When the national interstate network of information superhighways is completed 4 to 5 years from now, we will have an enormous growth in demand for the new services that will be demonstrated over that network.

And eventually, that demand will pull access to the new information services all the way to each individual home and business. The question before us today is can we move faster than we would otherwise move.

Ultimately, we will have a high-speed interactive fiber optic telecommunications network linking not only the large users of supercomputers, but every home, every school, every hospital, every business in the entire country. The legislation that Senator Burns and I are proposing today would utilize the economic structure of the broadband video marketplace to accelerate the process of extending access to the fiber optic network.

By providing an incentive for telephone companies to install fiber for that so-called last mile to the home, we would unleash this new technology to make possible a host of economic and educational benefits.

The policy question affecting the cable industry is not complicated. Current law prohibits the telephone companies from providing their customers with cable television services, given the absence of competition in the local cable marketplace.

Excuse me. Given the absence of competition in the local cable marketplace, the question before us is whether or not this restriction still makes sense or not. I believe that with careful construction of regulatory safeguards, this restriction does not, in fact, make sense any longer. Of course, the development of these safeguards is critical to preserving the competition balance in this industry. I for one want to make it clear that I have no interest in simply replacing one set of abusive monopolies with another.

If the net effect of telephone company entry into cable is a bidding up of the prices for existing cable systems, then I would not support telco entry. So, we have to be absolutely sure that these safeguards are both effective and strong.

The Senate has recently completed a tortuous debate about the problems consumers throughout the Nation are facing as a result of the existing cable monopoly. While there were heated arguments about the various aspects of S. 12, one thing seemed clear. Almost everyone prefers competition to regulation. And S. 12 does provide much needed competition for the existing cable monopoly.

If the President is smart, he will sign this bill into law, because consumers will then finally have some measure of choice in seeking these video services. Satellite dish owners, wireless cable subscribers, potential DBS customers, all will benefit from the program access provisions of the legislation.

And we also open the door slightly for the telephone company to provide cable in small communities. And all of that is progress. But we need to finish the job. We need to open this marketplace wide open by allowing the telephone companies, within certain limits and with a commitment to modernizing their networks, to compete with cable everywhere.

In doing so, we will unleash the capacity of these companies to develop new technology and wire this country with fiber optic cable for the next century. We should also understand that while telephone companies seek entry into the cable business, cable operators are moving aggressively to enter the telephone business. Within the past few days, TCI has announced that it will buy a major fiber optic network in New York, a network that is in the business of aggressively providing telephone bypass services. And moreover, the major cable operators, like everyone else in the communications industry, are moving fast to get into what is called personal communications services, or PCS.

This technology may rapidly break down the local hard wire switch telephone network, and cable plans to be there to capitalize on this development. So, these issues cannot be considered in isolation and I think it is time to open up this marketplace. Anything less is short sighted.

Now, in closing, Mr. Chairman, we have seen a dramatic shift in the technological and cultural underpinnings of the modern nation-state, including the United States of America. One of our advantages in the industrial age was the existence of a continent-size domestic marketplace which gave us the ability to quickly gain economics of scale and levels of quality that enabled our products to dominate world commerce.

Now that economic activity is moving so swiftly into the information age, it is absolutely essential that we capitalize on the fundamental premise of what is it to be a nation by providing some coherence to the United States of America's information marketplace.

If we can quickly elaborate a fiber optic network into every nook and cranny of the United States of America, we will once again recapture the domestic advantage in our marketplace that will enable us to be as successful in the information age of world competition as we were in the industrial age of world competition.

And this bill is designed to move us there quicker than we would get there in any other fashion. Mr. Chairman, thank you again for your patience. Both of the cosponsors here have given extraordinarily long statements, and we appreciate your patience.

Senator INOUE. I thank you, sir.

Senator Lott, would you care to make a statement?

Senator LOTT. Mr. Chairman, I will pass this time, because I would like to hear what the panel has to say. I just want to thank you for having this hearing and I am looking forward to what we are going to hear this morning.

Senator INOUE. Thank you, sir.

And now, may I call on the first panel, the Chairman of the Federal Communications Commission, the Honorable Alfred C. Sikes; the Acting Assistant Secretary for Communications and Informa-

tion of the U.S. Department of Commerce, Hon. Thomas Sugrue. It is always good to have you with us, sir.

STATEMENT OF HON. ALFRED C. SIKES, CHAIRMAN, FEDERAL COMMUNICATIONS COMMISSION

Mr. SIKES. Thank you, Mr. Chairman. Let me take this opportunity to thank you for the opportunity to testify. I have submitted a much longer version of my statement for the record. With the chairman's permission, I will now proceed with an abbreviated version.

Senator INOUE. Without objection, your full statement will be made part of the record.

Mr. SIKES. Let me state at the outset that I strongly support the fundamental thrust of the bill that is cosponsored by Senator Burns and Senator Gore.

Five years ago, when I headed NTIA, I recommended that we adopt as a concept a video dial tone network. Four years ago I recommended that the United States adopt as a national goal the speedy development of fiber and associated broadband facilities. That was the core recommendation of the Telecom 2000 report.

Today more than ever, Mr. Chairman, we all need to focus on what America can accomplish. Mr. Chairman, I'm a graduate of Missouri's Westminster College, which counts among its most distinguished honorees Sir Winston Churchill, who many of you recall delivered his "Iron Curtain" address at that college.

Churchill once warned that those who would pit the past against the present risk losing the future. Yet all too much of the strident rhetoric in communications today does precisely that. This is purely a prescription for paralysis, and an approach which I believe will place America's future at risk.

I commend Senators Burns, Gore, and Dole for their commitment to advancing our Nation's communication future. I promise to provide them and the subcommittee my active help and support.

Let me first simply note for the record that the old Bell system ceased to exist nearly 10 years ago. Consequently, there is no longer a monolithic firm beyond effective regulatory control.

Second, let me reiterate that the tools which are available to Federal and State regulators today are both numerous and effective.

Third, the Bell companies, which have been the principal focus of recent debate, are only some of the participants in telecommunications, and they are by no means the largest. Companies which are leaders in cable television, information services, and related markets include the world's largest entertainment firm, Time Warner; the U.S. subsidiary of British Telecom, Tymnet; Sears Roebuck and IBM with their Prodigy network; and many other Fortune 500 companies.

All parties to the current debate agree that a video dial tone capable network holds great promise. Increasingly, people believe it can make an important contribution toward health care delivery, education, and a number of other things that the Senator spoke so eloquently to this morning.

The availability of a video dial tone could contribute significantly, additionally, to economic development. Telecom 2000 de-

tailed these and other key contributions, but it also dealt with practicalities. No single customer requirement, for example, would probably warrant the capital outlays which video dial tone entails.

If more demand were aggregated, however, precisely the opposite would be true. I submit that prohibiting any communications providers from offering multiple services is a recipe for ensuring that future generations of Americans are burdened with a Third World-type communications network.

This is especially true of the telephone network. We need to keep in mind that Government and private sector together established it as a universal, switched, interactive network. It would be ironic indeed if Government laws assured its debilitation.

Just as importantly, inherent in the goal of a nationwide video dial tone system is a significant contribution to individual opportunities and freedom. Today, an early version of video dial tone and the information services it encompasses is available, but only to a relatively few. Only about 6 percent of the 22 percent of American households that have home computers also have a modem. For that minority of the minority of the public, in other words, video dial tone access is possible at least at some price.

U.S. information service customers at best represent something less than 8 percent of American residential telephone subscribers. Why is the number so low? One major reason is because there is no incentive for the telephone companies to invest in the technology and the plant to carry them to every American home.

To provide that incentive, what America needs is a clear commitment to capitalizing on the promise of a video dial tone capable network. Whether a video dial tone network develops rapidly and is propelled by market forces will depend on whether our laws blunt market forces.

We need a national consensus and commitment. The essential components of such a national commitment have been and should include, first, an assumption that competition in video and other information services will be good for both consumers and industry, as well as network modernization.

Second, there should be an understanding that competition will best be furthered by requiring the telephone companies which participate in the transmission of video services to offer capacity on a common-carrier basis.

Third, there should be an effort to encourage educators, health care providers, and Government service providers to develop and distribute video dial tone and other information services.

Now, for a minute, let me elaborate on the issue of telephone company participation, since this one issue has overshadowed the entire video dial tone debate. Telephone companies should be given the opportunity to provide video services. The opportunity, however, should be tempered by requiring them to make available a large measure of network capacity to others.

If, for example, the telephone company could program up to, say, 25 percent of the capacity of its video dial tone network but had to leave 75 percent to others, competition would be assured. Also, to ensure competition, you may wish to limit the number of entertainment programmers the telephone company might own.

It might also make sense to require any telephone company program entity to operate by separate subsidiary. In this instance, unlike others, synergies could not be accomplished through the integration of transmission and editorial functions. I would place a 10-year sunset on both prohibitions.

Limitations along these lines, as I have said, would tend to preclude the substitution of one cable television monopoly by another. Yet they would assure ample opportunity for competition. This, I want to underscore, is my own position. The Commission will act later this year on cable-telco crossownership.

This position is, as those of you who have followed this closely, a departure from my earlier position of supporting only common carrier entry. And I want to explain why. I have, since becoming FCC Chairman, supported and indeed sought to facilitate cable television companies' entry into telephone as well as other communication services.

While cable diversification into telephony is in its infancy, this industry initiative has strong and very capable parents. For example, two of the Nation's leading cable television companies, Cox Cable and TCI, will soon own and control all of the Teleport Communications Group.

Just last week I received the first coast-to-coast cable network-based telephone call, relayed by Cox Communications. Cable is also poised and well positioned to compete in providing video dial tone. Indeed, the cable industry is aggressively investing in fiber optics and digital technologies, which would give them expanded capacity, higher quality, and increased functionality.

And, they can make these investments based only upon strategic business decisions driven by consumer demand and without limitations on how they use their networks. Unlike local phone companies, cable operators are free to invest. They are limited only by their creativity.

I view these advances as positive. They could lead to increased options and competitive offerings for consumers. But only, only if the phone companies are permitted to provide competitive services.

We need to keep in mind that two of the most important differences between cable operators and telephone companies are that phone companies are common carriers, with obligations to serve all on a nondiscriminatory basis, plus the fact the telephone network is universal. As users—both small and large—increasingly require access to broadband networks, it will become increasingly important that they have guaranteed access to such networks. The only way that will occur is if local exchange carriers have the incentive to build and use such facilities.

I also want, in closing, to emphasize that I believe a national commitment to a video dial tone capable network could play a significant role in America's economic resurgence. A commitment to achieving national switched broadband capability will generate substantial demand for construction, advanced electronics, transmission systems, semiconductors, and computers, sectors where the United States is globally strong.

And such a network would be a platform for new investment and employment in the computer software and in the services sectors. In short, we are talking about investment, construction, new job

opportunities, and above all, unlocking a bright and expansive stage of information availability.

I know of few better ways that Congress could help produce good jobs for all Americans, and particularly in rural areas.

In conclusion, Mr. Chairman, I want to reiterate my enthusiasm and support for the important fundamental infrastructure advances which are envisioned by this bill. Thank you very much.

[The prepared statement of Mr. Sikes follows:]

PREPARED STATEMENT OF ALFRED C. SIKES

Thank you very much for this opportunity to testify.

Let me state, at the outset, that I strongly support the fundamental thrust of the Burns bill (S. 1200)—which is to foster the rapid development throughout the United States of switched broadband telecommunications capabilities. We have reservations regarding both the resource implications and substance of certain parts of the bill. These are points which I have asked our experts to review with the Subcommittee's staff.

I want to make clear, however, my strong personal support for the goals of this communications infrastructure measure—which could mean a great deal to our country and the American people.

EARLIER POLICY RECOMMENDATIONS

Five years ago, when I headed the Commerce Department's National Telecommunications and Information Administration (NTIA), I recommended that we adopt a concept which came to be referred to as "video dial-tone."

By "video dial-tone," I meant the emergence of a largely fiber-based broadband communications network—one which would offer all Americans ready access to a broad repertoire of new services: video services, of course, but also that family of computer-based offerings which, today, is sometimes referred to as "information services."

Four years ago, when I still headed NTIA, I recommended that the United States adopt as a national goal the speedy deployment of fiber and associated "broadband"—or very high-capacity—facilities. That was the core recommendation of the Telecom 2000 report.¹

I stressed the importance of ensuring that such a new, feature-rich communications system be universally available. I concluded it could make a significant contribution to the national interest, fostering not only "electronic neighborhoods" but also a stronger sense of national community. I emphasized the nearly incalculable value of such an advance, especially if new services could be accessed by all Americans—in their office, and in their home, whether in metropolitan or rural America.

Incidentally, I think it is worth noting, Mr. Chairman, that the Telecom 2000 report—and its concept of ubiquitous video dial-tone—is the only NTIA report to ever have been completely translated, and then commercially published, in Japanese. I gather that the Japanese language edition has already gone through two printings.²

Because sound public policy recommendations usually find universal application, I would also like to note that it was shortly after the Japanese edition of Telecom 2000 appeared that Nippon Telegraph & Telephone Company (NTT) publicly announced its own ambitious video dial-tone program—which may result in the "fibering" of Japan by the year 2015.

FOCUS ON THE FUTURE

Today more than ever before, Mr. Chairman, we all need to focus on what America can accomplish—in and through communications. America is being strongly challenged, both at home and abroad. At the same time, our potential—and the potential contribution of advanced technologies—has never been higher.

We need to realize the enormous implications that concepts such as video dial-tone hold for America's competitive future.³ We also need to resist the seduction of

¹ See NTIA Telecom 2000: Charting the Course for a New Century, U.S. Dep't of Commerce (Oct. 1988) (GPO #1988-223-864/90272).

² See NTIA Telecom 2000: Charting the Course for a New Century, NTT Publishing Co., Tokyo, 1988 (ISBN 4-87188-073-7).

³ See generally R. Cohen, The Economic Impact of Broadband Communications on the U.S. Economy and Competitiveness (Economic Strategy Institute, 1992).

just debating the past. In telecommunications, we especially need to avoid "policy gridlock" by re-arguing the historical events which precipitated the Government's AT&T antitrust suit—commenced some 18 years ago.

Mr. Chairman, I am a graduate of Missouri's Westminster College—which counts among its most distinguished honorees Sir Winston Churchill.

Churchill once said that those who would pit the past against the present risk losing the future.

Yet, all too much of the strident rhetoric in communications today does precisely that. Critics dwell on the real or imagined failures of the past. They dredge up the difficulties which might once have existed. They stress supposedly monumental costs and risks. They urge caution, further study. In short, they advocate that Congress and American industry stand pat.

This is truly a prescription for paralysis—and, an approach which I believe would place America's future at risk.

I commend Senators Burns, Gore, and Pole for their courage, and their demonstrated commitment to advancing our nation's communications future. I promise to provide them, and the Subcommittee, my active help and support.

MORE DIVERSE AND COMPETITIVE SECTOR

Mr. Chairman, let me respond briefly to some of the arguments which have been advanced against developing a world-class, video dial-tone capability.

Let me, first, simply note for the record that the old Bell System ceased to exist nearly 10 years ago. Consequently, there is no longer a monolithic firm beyond effective regulatory control.

Second, let me reiterate that the tools which are available to Federal and state regulators today are both numerous and effective. We can and do regularly benchmark phone companies prices, costs, access structures, performance, and capabilities. We can and do encourage competition. We can and do work closely with our colleagues, in the 51 regulatory commissions across the nation.

Third, the Bell companies—which have been the principal focus of recent debate—are only some of the participants in telecommunications, and they are by no means the largest.

With \$29.7 billion in total capital, for example, GTE Corporation is by far the largest local exchange telephone company today. GTE is more than twice the size of two of the Bell companies—Ameritech (\$14.8 billion) and Pacific Telesis (\$14.3 billion). It is nearly as large as AT&T (\$29.8 billion).⁴ Over the past 10 years, GTE has also been a significant factor in most of the markets which have been at issue. Not only have significant competitive concerns not arisen, but the firm has demonstrated genuine leadership—through its interactive fiber optic experiments and field trial activity in Cerritos, for example.

Companies which are leaders in cable television, information services, and related markets include the world's largest entertainment firm (Time Warner), the U.S. subsidiary of British Telecom (Tymnet), Sears Roebuck and IBM (Prodigy), and many other Fortune 500 companies.

This is a field, in short, where there is effective regulation of noncompetitive activities—and there is also intensifying competition among very large, very able, and highly adaptable companies.

POTENTIAL PUBLIC DIVIDENDSBUT TODAY, MR. CHAIRMAN, I WANT TO AVOID—AS CHURCHILL SAID—PITTING THE PAST AGAINST THE PRESENT. INSTEAD, I WANT TO CONCENTRATE ON THE FUTURE.

All parties to the current debate agree that video dial-tone holds great promise. It could make an important contribution toward better health care delivery and education—particularly in areas of the country outside major metropolitan areas.⁵

The availability of a video dial-tone could contribute significantly to needed economic development activities. One of the country's leading experts in this area is Professor Fred Williams of the University of Texas. He testified before the Federal Communications Commission (FCC) at our "Networks of the Future" public hearings last year.

Professor Williams often says that advanced communications are an important—though not sufficient—ingredient to rural development. Video dial-tone alone, in other words, may not be enough. By the same token, without video dial-tone, other

⁴Standard & Poor's Creditweek, Feb. 10, 1992, at pp. 15, 17.

⁵See 21st Century Learning and Health Care in the Role: Creating a National Telecommunications Network, Inst. of Alternative Futures & Consumer Interest Research Inst., Washington, D.C. (1992).

economic development initiatives may prove insufficient. Certainly you do need good roads, electricity, and a sound workforce. But without advanced telecommunications, those traditional ingredients to progress will probably not work.⁶

NEED TO AGGREGATE DEMAND

Telecom 2000 detailed these and other key contributions which video dial-tone could make. But that seminal report also emphasized practicalities.

No single customer requirement, for example, would probably warrant the capital outlays which video dial-tone entails. By themselves, in other words, the health care community, the educators, and those committed to economic development, for instance would be hard-pressed to cost-justify a video dial-tone system. If that demand were aggregated, however, precisely the opposite would be true. A video dial-tone system meeting the suggested needs of these and other important user communities almost certainly would prove a success.

Telecom 2000 also noted the severe cost burdens which current legal limits on the efficient use of advanced technology can impose. If a video dial-tone system is restricted to meeting only one class of needs, that single revenue stream is not likely to prove sufficient. Consequently, restrictions on the use of high-capacity facilities that are capable of a multiplicity of users will have the practical effect of deterring investments—investments which could pay important national dividends.

If, by law, we continue to prohibit a diversity of services from being offered to the public by a video dial-tone system, the reality is that there will be no such system. Or, its deployment in America will dramatically lag that of much of the rest of the developed world.

I submit that prohibiting any communications providers from offering multiple service—particularly providers that now offer telephony, which the Government see as having special importance—is a recipe for ensuring that future generations of Americans are burdened with Third World-type communications.

INDIVIDUAL EMPOWERMENT

Just as importantly, inherent in the goal of a nationwide video dial-tone system is a significant contribution to individual opportunities and freedoms.

Today, an early version of video dial-tone and the information services it encompasses are available—but only to a relative few. About 6 percent of the 22 percent of American households that have home computers also have a modem. For that minority off a minority of the public, in other words, access is possible—at least at some price.

But the total number of U.S. information service customers does not exceed 7 million and, indeed, may be far fewer. According to the American Newspaper Publishers Association (ANPA), for example, it is only about 4.6 million. About 97.4 percent of total revenues derives from business—not residential—users.⁷

The demographics of today's residential information users are instructive. One of the leading service vendors—Prodigy—in materials provided to its advertisers notes, for example, that 87 percent of users are men. The median household income of Prodigy subscribers is \$73,200; 48 percent of those subscribers, moreover, have household incomes of more than \$75,000 (compared to less than 10 percent of the U.S. population overall).

To place these numbers in some perspective, we currently have about 96 million U.S. households. More than 88 million homes have a telephone and, in addition, there are about 30 million business telephone customers.⁸ U.S. information service customers, in other words, at best represent something less than 8 percent of American residential telephone subscribers.

By comparison, about 5.6 million (20 percent) of France Telecom's 28 million lines are currently served by just their Minitel service.⁹ If the United States had a pro-

⁶See F. Williams, *The New Telecommunications: Infrastructure for the Information Age* (Free Press-Macmillan, Inc., 1991). See also Hearings on Bringing the Information Age to Rural America, House Subcommittee on Government Information, Justice, and Agriculture, 101st Cong., 1st & 2d Sess. (1989).

⁷See *Presstime*, Sept. 1991 at p. 20.

⁸1992 U.S. Industrial Outlook, U.S. Dep't of Commerce, at p. 28-1.

⁹M. Fossier & M.M. Stecxell *France Telecom: An Insider's Guide* (Intertech Publishing Co., New York, 1991) at p. 37.

portionate penetration of simply this one category of information services, we would have about 24 million customers alone.

NECESSARY MEASURES

Why is the number of information service users so low? One major reason is because there is no incentive for telephone companies to invest in the technology and the plant to carry them to every American home. To provide that incentive, what America needs is a clear national commitment to capitalizing on the promise of video dial-tone. Most importantly, we need to ensure that all of our communications policies and actions encourage—not discourage—the speedy deployment of this technology on a competitive basis.

One positive step was made possible when President Bush signed legislation regarding the National Research and Education Network or "NREN." Not only will this initiative respond to critically important national needs, it will also demonstrate the value of a switched broadband network capability. It will further "jumpstart" equipment and services markets which will be important in the universal deployment of a video dial-tone system.¹⁰

A NATIONAL COMMITMENT

Whether a video dial-tone network develops rapidly—and is propelled by market forces—will depend on whether our laws blunt market forces. In that regard, we need a national consensus and commitment.

The essential components of such a national commitment to a video dial-tone capability have been and should include:

- An assumption that competition in video and other information services will be good for both consumers and industry—as well as for network modernization;
- An understanding that competition will best be furthered by requiring that telephone companies—which participating in the transmission of video services—offer capacity on a common carrier basis; and,
- An effort to encourage educators, health care providers, and government service providers to develop, distribute, video dialtone and other information services.

TELEPHONE COMPANY OPPORTUNITIES

Let me elaborate on the issue of telephone company participation, since this one issue has overshadowed the entire video dial-tone, electronic infrastructure debate.

Telephone companies should be given the opportunity to provide video services. The opportunity, however, should be tempered by requiring them to make available a large measure of network capacity to others.

If, for example, a telephone company could program up to, say, 25 percent of the capacity of its video dial-tone network—but had to leave 75 percent to others—competition would be assured. Also to ensure competition, you may wish to limit the number of entertainment programmers a telephone company might own. Vertical integration often has benefits—but it also entails some competitive risks.

It might also make sense to require any telephone company programming entity to operate via a separate subsidiary. In this instance—unlike others—synergies could not be accomplished through integration of transmission and editorial functions.

I would place a ten-year sunset on both prohibitions. At the same time, however, I would place no restrictions on what phone companies might choose to do with their 25 percent of total video dial-tone capacity. Nor would I place restrictions on their activities regarding the networks they are permitted to own.

REASON FOR RESTRICTIONS

Limitations along these lines, as I have said, would tend to preclude the substitution of one cable television monopoly by another, yet they would assure ample opportunity for competition. By placing a firm 10-year sunset on these limitations, moreover, the ability of existing industry players to order their investment programs, and further hone their competitive skills would be enhanced.

This, I want to underscore, is my own position. The Commission will act later this year on video dial-tone matters. But the Commission has not prejudged the available options.

¹⁰ See Remarks of the President on Signing the High Performance Computing Act of 1991 (P.L. 102-104), 27 Weekly Comp. of Pres. Docs. 1794-96 (Dec. 9, 1991).

I want to add that I am not solely advocating telephone company entry into cable. In fact, I have both supported and, indeed, sought to facilitate cable television companies' entry into telephone as well as other communications services.

Cable's diversification into telephony is in its infancy, but this industry initiative has strong and very capable parents. For example, two of the nation's leading cable television companies—Cox Cable and TCI—will soon own and control all the Teleport Communications Group. Just last week, I received the first coast-to-coast, cable network-based telephone call—relayed by Cox.

Additionally, the FCC has provided scores of experimental licenses to cable firms, and to partnerships including cable companies, which are seeking means of offering two-way voice and other communications. Two months ago, the Commission took the first steps toward opening up a new band of radio frequencies to be used for "Personal Communications" and other new services. Cable television companies are poised, and well-positioned, to compete for the right to use those radio frequencies.

Now, I know that critics of my position will point out that most telephone companies are larger than most cable firms. At the same time, cable television companies are potentially very formidable competitors. The leading cable companies, through their vertical integration and by virtue of their demonstrated agility and expertise, have a very strong position in the key future market—programming. By comparison, the telephone companies' expertise lies in transmission and switching—fields which are increasingly commodity markets in which many other firms are participating.

ADDITIONAL BENEFITS

Let me hasten to add that I do not believe that affording telephone companies expanded opportunities will result in a single network. Rather, I believe there will be satellite, mobile, broadcast, as well as cable and other distribution technologies. They will provide both independent and competitive transmission paths, and will often be linked together in a network of networks.

I also want to emphasize that I believe such a national commitment could play a significant role in America's economic resurgence.

A commitment to achieving national switched broadband capability has the potential to generate substantial demand for advanced electronics, transmission systems, semiconductors, and computers—sectors where U.S. industry is globally strong. Significantly, such a capability would almost surely be the basis—or "platform"—for new investment and employment in the computer software and services sectors. In short, we are talking about investment, construction, new job opportunities, and, above all, unlocking a bright and expansive stage of information availability. I know of few better ways that Congress could help produce good jobs for all Americans—particularly those in rural areas.

CONCLUSION

In conclusion, Mr. Chairman, I want to reiterate my enthusiasm and support for the important, fundamental infrastructure advances which are envisioned by the Burns bill.

I think enactment of this bill would make a significant contribution. I look forward to working with its sponsors as well as the other members of the Subcommittee.

Senator INOUE. Thank you, Mr. Chairman.

May I call upon Secretary SUGRUE?

STATEMENT OF THOMAS SUGRUE, ACTING ASSISTANT SECRETARY OF COMMUNICATIONS AND INFORMATION, DEPARTMENT OF COMMERCE

Mr. SUGRUE. Thank you, Mr. Chairman, and good morning. Like the Chairman of the FCC, I have submitted the more lengthy statement that I would request be included in the record, and I would propose to give a somewhat abbreviated version of that.

It is a pleasure for me to appear before you and offer the administration's views on Senate bill 1200, the Communication's Competitiveness and Infrastructure Modernization Act of 1991. The administration strongly supports the deregulatory, procompetitive thrust of S. 1200. In our view, the removal of Government-imposed

barriers and broader telephone company provision of video programming, as S. 1200 would do, would increase competition in the video services marketplace. That should lead in turn to lower prices, better service and the wider range of programming for consumers.

Expanding telephone companies' ability to provide cable television services should also encourage further development of our domestic telecommunications infrastructure. In October, the Department of Commerce released the NTIA infrastructure report: "Telecommunications in the Age of Information," which demonstrates why the development of an advanced telecommunications system is critical to the economic and social health of America.

That report offers myriad examples of how telecommunications can enable U.S. firms to reduce costs, better serve their customers, and become more competitive in the global marketplace; facilitate economic development; especially in rural areas; expand and improve delivery of critical services like education and health care; help Americans better cope with conflicting demands of work, home, and family through such innovations as telecommuting; and give persons with disabilities better access to the opportunities that other Americans take for granted.

By most measures, the U.S. public telecommunications network remains second to none in the world. Network usage in the United States far outstrips usage by our major trading partners, and the rates that U.S. consumers pay for their usage of telecommunications are generally lower than those paid by consumers elsewhere. Telephone penetration in this country has also continued to grow. As a result, in 1991, a higher percentage of U.S. households had telephones than at any time in history.

Moreover, the United States has a larger and more advanced system of private networks than any other nation, and those networks commonly employ state of the art facilities and equipment. However, the future status of the public telecommunications network, which is the only alternative for most residential and small business customers, is less clear.

As indicated in the chart to my right, based on current projections, by 1994 the United States could well trail several major trading partners in the deployment of several leading-edge technologies such as digital switching, electronic switches, ISDN and Signalling System No. 7. This is information drawn from our infrastructure report.

The red bars give the penetration of those technologies in 1989—that is, historical penetration, the blue bars give the projected penetration by 1994, and the numbers in parentheses indicate where we stand relative to the group of seven countries, that is the seven nations with the largest economies, the largest GNP.

I think this chart is sort of a good news/bad news message. The good news is deployment of modern technologies in the United States continues. There is progress in each case, and in some cases it is significant from 1989 to 1994. The bad news is that in each case also we have fallen further behind a number of our trading partners. Our rank, going from 1989 to 1994, has dropped in each instance.

These trends raise legitimate concerns that we may eventually have two telecommunications infrastructures: Advanced feature-rich private networks for large business customers, and a less well-developed public network for other users. For these reasons, the administration supports the basic goals of S. 1200, to benefit consumers through increased video competition, and improve video services, and to promote the efficient development of an advanced telecommunications infrastructure.

S. 1200 presents a powerful vision of harnessing the convergence of video, telephone and other services in a nationwide broadband communications system. While the administration supports the basic intent of the bill, we do not agree with all of its provisions. For example, the nationwide broadband communications system described in S. 1200 is a laudable goal, but we do not favor mandating the establishment of such a network by a specific year. The administration believes that a marketplace free from restrictions on competitive entry and unnecessary regulation, as the bill promotes, will achieve the timely deployment of a state-of-the-art network.

A Government-mandated schedule is neither necessary nor appropriate. Indeed, it could prove, over time to be counterproductive. Technology and marketplace conditions in telecommunications change so rapidly that rigid schedule could result in a misdirection of resources in ways not beneficial to consumers.

On the other hand, I would like to reiterate the administration's strong support for one fundamental component of S. 1200, the proposal to eliminate the existing telephone-cable crossownership plan. Permitting local exchange carriers to compete in all aspects of the cable television business could induce them to deploy broadband network facilities more rapidly than is currently the case.

Once those facilities become established, they will enable other entrepreneurs to make available a vast array of voice, data, and video services to American consumers. In this way allowing LEC's to enter the cable television business, including the provision of video entertainment programming could be the engine that pulls an entire train of socially beneficial services, in addition to providing competition to incumbent cable operators.

Although competitive safeguards should accompany the removal of the cable/telco restriction, we recommend that Congress avoid attempting to specify detailed safeguards in this legislation. A better approach on which Congress has relied regularly over the years would be to allow the expert administrative agency, the FCC, to craft the necessary safeguards, subject to specific guidance from Congress on policy goals to be pursued and careful oversight from Congress on implementation.

For example, we believe the video dial tone approach that Chairman Sikes developed while at NTIA, and that the FCC has recently proposed for underline transmission facilities for video services, provides one valuable and important safeguard in this area. I would also like to emphasize that in the administration's view, elimination of the cable/telco restriction should be but one step in a broader effort to increase competition in all telecommunications markets.

Quite simply, if telephone companies can compete with cable operators, cable operators should be able to compete with telephone companies. This is not only simple competitive fairness; it is also a way to bring the benefits of competition to the last bastion of monopoly in the telephone marketplace, the local exchange.

Today, the vast majority of Americans have access to communications services delivered through two wires to their homes. One wire, owned by the local telephone company, delivers only narrowband two-way voice and data services. The other, owned by the cable television company, in most cases delivers only one-way broadband services. Despite the fact that technology increasingly would permit each of these two systems to offer a full range of services in direct competition with the other, we today prohibit or severely restrict competition between these two systems as a matter of public policy.

The rationale for Government-imposed rules between these two potential competitors is increasingly unconvincing. It is one thing to regulate when competition is not feasible; it is another to affirmatively regulate against competition when there are strong indications that competitive forces are straining against such regulations for a chance to emerge.

As experience shows in the long distance and equipment markets, competition can dramatically reduce consumer costs, improve efficiency, and spur infrastructure development. The administration believes the same types of benefits could be realized in the local exchange services market as well.

Finally, like the sponsors of S. 1200, the administration envisions a future where telecommunications is truly a window to the world for rich and poor, for those in cities and those in rural areas, for students, for older Americans, for all those who, from time to time, have been relegated to the back roads and side streets of modern society. We see a world where prices will be affordable, where information will be accessible, and where distances will no longer be a barrier to good jobs, good education, and good health care.

The administration believes that S. 1200 will promote development of that infrastructure, not by mandating deployment schedules, but by removing Government-imposed barriers to competition, investment, and innovation in telecommunications markets.

We commend the members of the subcommittee and the sponsors of S. 1200 for addressing these critical issues, and we look forward to working on them with you in the coming months.

That concludes my testimony, and I will happy to answer any questions.

[The prepared statement of Mr. Sugrue follows:]

PREPARED STATEMENT OF THOMAS J. SUGRUE

Good morning, Mr. chairman and Members of the Subcommittee. It is a pleasure for me to appear before you to offer the Administration's views on Senate Bill 1200—the "Communications Competitiveness and Infrastructure Modernization Act of 1991." The Administration strongly supports the deregulatory, pro-competitive thrust of S. 1200. In our view, removing a statutory barrier to broader telephone company provision of video programming, when coupled with safeguards to prevent anticompetitive behavior, (as S. 1200 would do) would increase competition in the video services marketplace. That should lead, in turn, to lower prices, better service, and a wider range of programming for consumers.

Expanding telephone companies' ability to market video programming could promote further development of the domestic telecommunications infrastructure. In October, the Department of Commerce released the NTIA Infrastructure Report: Telecommunications in the Age of Information, which demonstrates why the development of an advanced telecommunications system is critical to the economic and social health of America. That report offers myriad examples of how U.S. firms, from the Boeing Company in Washington to Telecommunications Marketing, Inc. in Nebraska, are employing telecommunications to reduce costs, better serve their customers, and become more competitive in an increasingly globalized marketplace. The report shows how telecommunications can facilitate economic development, especially in rural areas.

The Infrastructure Report also describes how telecommunications can expand and improve delivery of critical services, like education and health care, from Massachusetts to Mississippi. It notes how telecommunications can help Americans better cope with the conflicting demands of work, home, and family through such innovations as telecommuting. It also emphasizes how telecommunications can give persons with disabilities access to the opportunities that other Americans take for granted.

While the Infrastructure Report documents the importance of an advanced telecommunications system, it also raises questions about whether the United States will have such a system in place when we need it. To be sure, as has been the case in the past, new technologies are continually being incorporated into U.S. telecommunications networks. By most measures, the U.S. public telecommunications network remains second to none in the world. Network usage in the United States far outstrips usage by our major trading partners, and the rates that U.S. consumers pay for that usage are generally lower than those paid by consumers elsewhere. Telephone penetration in this country has also continued to grow. Moreover, the United States has a larger and more advanced system of private networks than any other nation. One observer has estimated, for example, that nearly 30 percent of total telecommunications capital expenditures in 1988 was devoted to private networks, which commonly employ state-of-the-art facilities and equipment.

However, the future status of the public telecommunications network, which is the only alternative for most residential and small business customers, is less clear. As noted in S. 1200, for example, Nippon Telephone and Telegraph Company has announced a goal of installing broadband fiber optic cable to every business, home, and institution in Japan by the year 2018. More immediately, as indicated in the chart, based on current projections, by 1994 the United States could well trail several major trading partners in the deployment of several leading edge technologies, such as digital switching, ISDN, and Signalling System #7. These trends raise legitimate concerns that we may eventually have two telecommunications infrastructures—advanced, feature-rich private networks for large business customers and a less well-developed public network for other users.

For these reasons, the Administration supports the basic goals of S. 1200—to benefit consumers through increased video competition and improved video services, and to promote the efficient development of an advanced telecommunications infrastructure. S. 1200 presents a powerful vision of harnessing the convergence of video, telephone and other services in a nationwide broadband communications system. The principal regulatory changes proposed in the bill—removing the current ban on telephone company provision of video programming and promoting multiple uses of communications technologies—can help turn that vision into reality.

While the Administration supports the basic intent of the bill, we do not agree with all of its provisions. For example, the nationwide broadband communications system described in S. 1200 is a laudable goal, but we do not favor mandating the establishment of such a network by a specific year. The Administration believes that a marketplace free from restrictions on competitive entry and unnecessary regulation, as promoted by the bill, will achieve the timely deployment of a state-of-the-art network. A government-mandated schedule is neither necessary nor appropriate. Indeed, it could over time prove to be counterproductive. Technology and marketplace conditions in telecommunications change so rapidly that a rigid schedule could result in a misdirection of resources in ways not beneficial to consumers.

The Administration believes that fully competitive telecommunications markets will produce the greatest benefits for consumers and eliminate the need for extensive government regulation. Thus, the Administration believes that the goals of S. 1200 would best be met through its deregulatory, procompetitive provisions, including the establishment of a national policy encouraging multiple uses of communications technologies. This would get government out of the business of determining which services can be delivered over which technologies. Such an approach, coupled with the adoption of regulatory reforms to increase incentives for efficiency and

technology development, would be the best way of ensuring that new communications technologies will truly serve the American people.

On the other hand, I would like to reiterate the Administration's strong support for one fundamental component of S. 1200—the proposal to eliminate the existing telephone-cable crossownership restriction. As the Infrastructure Report states, giving local exchange carriers ("LECs") freedom to participate in the video services marketplace should both expand competition in the provision of such services to the home and create incentives for LECs to construct advanced broadband facilities for the delivery of video to the home, which could promote development of our nation's telecommunications infrastructure.

After extensive study of this issue in the Infrastructure Report, NTIA concluded that the LECs may not have incentives to deploy such facilities in the near-to-mid-term unless they are also allowed to provide video programming. Construction of a broadband public network will entail both substantial costs and considerable risks. As a practical matter, risk-averse investors will fund the deployment of advanced broadband facilities only if they can justify the investment costs on the basis of proven revenue generators. Entertainment video is the single broadband service for which there is existing, well-established, and substantial demand in the residential marketplace. Denying LECs an opportunity to offer such services, except under very constrained conditions, simply makes the considerable risks of deploying advanced broadband facilities that much greater.

On the other hand, as noted in the Infrastructure Report permitting LECs to compete in all aspects of the cable television business, including program production and packaging, could assure them that there will be customers to generate the revenues needed to defray the costs of broadband facilities. This could, in turn, induce LECs to deploy broadband network facilities. Once those facilities become established, they could well attract additional, unaffiliated program packagers, thus giving LECs further incentives to expand and upgrade their broadband networks. Moreover, the LECs' facilities would enable other entrepreneurs to make available a vast array of voice, data, and video services to American consumers. In this way, allowing LECs to provide video entertainment programming could be the engine that pulls an entire train of socially beneficial services, in addition to providing competition to incumbent cable operators.

The Administration believes that other provisions in Title III of S. 1200, such as the expansion of the so-called "rural" exemption to the crossownership restriction and the changes to existing franchising practices, will also remove barriers to entry into the video services market, thereby promoting competition and infrastructure development.

We also believe that Title III should be refined in at least one respect. First, although competitive safeguards should accompany removal of the crossownership restriction, Congress should avoid attempting to specify detailed safeguards in this legislation. A better approach, on which Congress has relied regularly over the years, would be to allow an expert administrative agency (in this case the FCC) to craft the necessary safeguards, subject to specific guidance from Congress on the policy goals to be pursued, input from industry, and careful oversight from Congress on implementation.

For example, both NTIA and the Department of Justice have supported the Open Network Architecture model adopted by the FCC in regulating provision of enhanced services by the Bell Operating Companies. Under an ONA approach for video services, LECs would provide underlying transmission facilities on a common carrier basis, while they would provide video programming services on a competitive, deregulated basis. The FCC's recently-proposed "video dialtone" model, which NTIA has supported in concept, can be viewed as an effort to implement ONA in a video services environment.

I have dealt with the telephone/cable crossownership restriction in some detail because it is such a major component of S. 1200 and because its repeal has such important implications for American consumers and industry. However, I would like to emphasize that, in the Administration's view, elimination of that restriction should be one step in a broader effort to increase competition in all telecommunications markets. Quite simply, we believe that if telephone companies are allowed to compete with cable operators, regulations that inhibit cable operators from providing telephone services should also be removed. This is not only simple competitive fairness; it is also a way to bring the benefits of competition to the last bastion of monopoly in the telephone marketplace—the local exchange.

Today, the vast majority of Americans have access to communications services delivered through two wires to their homes. One wire, owned by the local telephone company, delivers only "narrowband," two-way voice and data services. The other, owned by the cable television company, in most cases delivers one-way, broadband

services. Despite the fact that technology increasingly would permit each of these two systems to offer a full range of services in direct competition with the other, despite the fact that this country has a strong commitment to competition over monopoly as the best economic structure to serve our people, we today prohibit, or severely restrict, competition between these two systems as a matter of public policy. The rationale for government-imposed walls between these potential competitors is less convincing today than it once might have been. It is one thing to regulate when competition is not feasible; it is another to affirmatively regulate against competition when there are strong indications that competitive forces are straining against such regulations for a chance to emerge.

Without question, local exchange competition is beginning, from cable systems as well as other providers. As noted in the Infrastructure Report, according to one estimate, some 34 firms are now offering or are planning to offer alternative local telecommunications services in more than 38 cities in 26 states. Cable companies are now conducting trials relating to personal communications services (PCS), which will provide wireless telephone service in competition with both cellular radio and traditional wireline telephone service. Two of the largest cable firms, Tele-Communications Inc. and Cox Enterprises, will soon be the sole owners of Teleport Communications, which offers alternative local telecommunications services in some 25 municipalities across the nation.

As experience shows in the long distance and equipment markets, competition can dramatically reduce consumer costs and improve efficiency. The record with respect to long distance services also demonstrates that competition can significantly spur infrastructure development. Accordingly, the Administration believes that the FCC and the states should remove existing legal barriers to entry into the local exchange services market. Regulators should facilitate competitive entry by mandating that LECs provide efficient interconnection opportunities to other firms that provide local exchange services to the public. We support the FCC's rulemaking on local access interconnection with respect to special access services subject to federal jurisdiction. We also recommend that state commissions continue their innovative proceedings to introduce mandatory local exchange interconnection.

With the advent of local exchange competition, existing pricing policies must be substantially reformed to permit LECs to respond to the new entrants, and to ensure that entry is economically efficient. LECs should be afforded significant flexibility when they face competition, subject to appropriate safeguards against anti-competitive behavior.

Like the sponsors of S. 1200, the Administration envisions a future where telecommunications is truly a window to the world for rich and poor, for those in cities and those in rural areas, for students, for older Americans, for all those who, from time to time, have been relegated to the back roads and side streets of modern society. We see a world where prices will be affordable, where information will be accessible, and where distances will no longer be a barrier to good jobs, good education, and good health care. Continued development of an advanced telecommunications infrastructure is critical to the creation of that future world. The Administration believes that S. 1200 will promote development of that infrastructure, not by mandating deployment schedules, but by removing government-imposed barriers to competition in telecommunications markets. Facilitating further competition, coupled with the adoption of regulatory reforms to increase incentives for efficiency and technology development, would be the best way of ensuring that new communications technologies will truly serve the American people.

That concludes my testimony. I will be happy to answer any questions you might have. Thank you.

Senator INOUE. Thank you very much, Mr. Secretary.

Senator Burns, Senator Gore has just advised me that he has to leave right away, so may we accommodate him?

Senator BURNS. You may.

Senator INOUE. Senator Gore.

Senator GORE. Thank you very much, Mr. Chairman, and may I also apologize to later witnesses. Before the date for this hearing was selected, I had accepted some events outside the city that I cannot cancel, and I am chagrined because I have examined the statements of the witnesses who are upcoming, and they are excellent.

I would like permission to submit a number of questions for the record to later witnesses if that is possible. I see a number of friends. My good friend Bill Squadron, Commissioner of Telecommunications up in New York City, will be on a later panel, and Mike Dertouzos whom I worked with—he is at MIT and has an outstanding statement, Chip Shooshan I worked with in the House, others on the witness that I would like to hear personally.

But to this panel, Mr. Chairman, Mr. Sugrue, I enjoyed hearing your statements. I will be brief in my questions.

But first, Chairman Sikes, you indicate in your prepared testimony that State and Federal regulators have numerous and effective tools to prevent cross-subsidies or other anticompetitive behavior. The availability of these tools and the willingness to use them are the essential concerns, as we consider relaxing the cable telco crossownership prohibition.

For the record, would you please elaborate on these tools and address the much-repeated charge by the cable operators and others that the States and the FCC are understaffed, underfunded, and in many cases unwilling to enforce such standards.

And Mr. Sugrue, if you would, for the record, discuss what you believe would occur if the incentive is denied to telephone companies, how long would the delay be in deploying fiber to the home?

In order to catch my plane I apologize that I do have to leave, but I would like to get the response for the record, and, Mr. Chairman, thank you for your courtesy.

Senator INOUE. Thank you.

Mr. SIKES. Mr. Chairman, do you want me to verbally respond to Senator Gore's question?

Senator INOUE. I think it might help him if you could submit a written response.

Mr. SIKES. Will do.

Senator INOUE. Senator Burns.

Senator BURNS. Thank you, Mr. Chairman, and thanks to Messrs. Sikes and Sugrue for coming today. We appreciate your comments and whatever you could add to the dialog here as we try to move this legislation along.

Mr. Sikes, the NCTA has said that part of the problem with the regulatory safeguards is that regulators do not have the resources and the ability to enforce them, and they point to the 1987 GAO study which concluded that the FCC staff is able to audit each relevant telco account only once every 16 years. And the level of oversight the FCC is prepared to provide will not provide telephone ratepayers or competitors positive assurance that the FCC cost allocation rules and procedures are properly controlling cost subsidy. I would just like for you to respond to that, please.

Mr. SIKES. Well, there has been a great deal that has been accomplished in the area of precluding cost shifting in the last 5 years. First of all, with regard to our auditors, we audit each Bell operating company, for example, each year. That does not mean that we audit each of their accounts each year, but we audit each Bell operating company plus some other large, what are called "Tier 1" local exchange carriers, each year.

One of the most significant changes in the last 5 years has been the full development of an automated reporting service, and so we

get on a frequent basis data, cost data, that we then compare on a company-by-company basis. And now, because we have eight very large telephone companies, the seven Bell operating companies and GTE, we are able to make relevant comparisons and therefore pinpoint, redflag if you will, difficulties that we should send our auditors in to specifically audit.

Third, we have begun attestation audits that have to be done on an annual basis and our staff additionally reviews those attestation audits. Next, we have implemented price caps regulation, which has a very blunting effect on any interest in shifting costs of a new competitive venture into the rate-based side of the business, because you cannot increase your prices on the rate-based side of the business.

And then, finally, we have, as I mention in my statement, worked hard to facilitate competition to local exchange carriers, and at present they are competitively engaged in respect to many of the high-volume customers. Now, when you are facing competition, you simply cannot do that kind of cost shifting. For the most part, these competitive access providers probably have lower cost structures to begin with, and the thought that the Bell operating companies or other local exchange carriers can kind of shift costs of new ventures in and still be competitive is just nonsense.

Senator BURNS. In your testimony today and in your opinion, does S. 1200 meet the objection to some of these criticisms of cross-subsidization and auditing procedures? Does it meet the objection by requiring telcos to have separate subsidiaries to their video services, and have their control limited to 25 percent of the channels offered?

Mr. SIKES. I think those are additional safeguards. While we have in some areas felt that the requirement of separate subsidiaries was not important because it denied important synergies, in this area of a program service subsidiary we do not believe that, and so I think that additional safeguard would be quite constructive.

Senator BURNS. Mr. Sugrue, would you like to comment on that?

Mr. SUGRUE. Yes, Senator. There is a certain irony in that the cross-subsidization problem or common cost problem is actually greater for the activities already supported by the opponents of telephone company entry. That is, a restrictive video dial tone approach where everyone agrees I think they should be allowed to provide video transmission facilities under some rules. The problem is separating the costs of, let us say, a fiber that has both voice data and video traffic going over it. I mean, it is doable and the FCC and joint boards would develop rules for that, as they have developed rules to handle the various cost allocation issues.

Once you get into video packaging and programming, it is actually somewhat easier and there are fewer common costs involved. For that reason, while we traditionally do not support separate subsidiary requirements and we do not support them here, we also do not oppose them violently. Because as the Chairman said, the synergies are not that great there, and therefore the costs from those requirements are not that significant.

If it gives everyone a sense of feeling better about the whole thing, a sense of ease, we think it is a useful tradeoff to go forward on that basis.

Senator BURNS. Although the FCC as well as individual State commissions may have the ability to guard against cross subsidization, the ability for one to try to break the rules is always present. S. 1200 therefore contains a death penalty provision. Under that provision, if a telephone company engages in cross-subsidization they will be forced to divest that separate subsidiary from providing cable service. That penalty would be in addition to penalties already available in the Communications Act of 1934, in the FCC rules and regulations, the individual State commissions' activities and penalties, and the antitrust Laws.

What do you believe would be the effect if such a penalty in addition to the current penalties available to you through the 1934 act—in other words, are we going too far than what was probably envisioned by the 1934 act, or would you agree with the direction that we are taking it?

Mr. SIKES. Well, I know that as a matter of principle. If within, let us call it, a law-abiding sector, you stiffen the punishment for not being law abiding, for deviating from whatever the law is, you typically suppress deviation. That does not necessarily work in the criminal sectors, as we unfortunately have found out.

So, I think that, while I do not know that we need a lot more authority to penalize cost shifting or cost subsidization, I nonetheless think that additional authority could possibly be constructive.

Mr. BURNS. Mr. Chairman, I have some further questions. I would like to ask unanimous consent, if we could submit those questions to both Mr. Sikes and Mr. Sugrue, and have them respond to those questions as a part of the record.

Senator INOUE. Yes, sir, and I am certain that they will be most happy to accommodate us, and Senator Gore also has some questions he would like to submit.

Senator BURNS. Just to move it along, I think we should do that. Thank you.

Senator INOUE. I think all of us agree that the major centerpiece of S. 1200 is the lifting of the cable telephone crossownership restriction, and therefore it saddens me very much that cable companies preferred not to accept our invitation to appear and none of the telco companies decided to accept our invitation to testify. They are all submitting written statements.

However, in December last year, 1991, the chief executive officer of Bell Atlantic, Mr. Ray Smith, made a speech at the DLJ symposium, and he made some very interesting statements. For example, he said we are experiencing two or three times the savings in maintenance costs on fiber networks that we expected, and he stressed that when it comes to full fiber deployment that effort over the next 4 to 5 years will not rely on money from incremental revenues. It will all be justified by the costsavings.

And then Mr. Smith went further and emphasized that the companies' aggressive broadband deployment strategy does not depend on video revenues or on winning freedoms to control video programming. And I would gather from those statements that at least

Mr. Smith feels that we can accelerate the broadband deployment without this bill.

Mr. SIKES. Let me comment on that. First of all, I am not going to comment on whether Mr. Smith's numbers are or are not correct, because I do not have the background or the examination of Bell Atlantic, and they have been one company that has been quite aggressive in network modernization. What I think—I think it points up two or three things.

First of all, we are talking about timing. We are talking about a lot of companies and a lot of networks. And I think that the speed at which deployment occurs is going to pivot in part on what is done on this particular bill.

Second, opponents we have often heard, Mr. Chairman, cite the extraordinary cost of having a broadband fiber-based network nationwide. The costs, as I think you cited in your own opening remarks, are often stated as \$200 to \$400 billion, as I recall.

Senator INOUE. Mr. Smith suggested it could be between \$1,300 to \$1,500 per household.

Mr. SIKES. The fact is that currently the local exchange carriers are spending about \$18 billion a year in upgrading the network. That, over 20 years, is \$360 billion. And so, as a practical matter, a lot of the things that would lead to this kind of network that we are talking about are literally being done now, are encompassed within the \$18 billion approximately each year the telephone companies spend, and so when people try to say, well, what we are going to do is, we are going to visit another \$400 billion bill on phone company ratepayers, I just do not buy that. And I think that in a sense Mr. Smith was additionally saying that.

The other thing that I have tried to encourage is that I have tried to encourage the notion of telephone company/cable company cooperative strategic facilities ventures. I have, for example, said that I think cable companies should be able to enter into "condominium" positions with respect to local networks which might give them tax advantages over simply buying on a monthly or an annual basis the transmission paths they want.

But cable is not dumb, and as long as its lack of participation in this way can delay the time that there will be this broadband network open on a common-carrier basis, thus open to competition, they will delay it. So, I think that S. 1200 in fact is pivotal.

I think as Mr. Smith points out, regardless of whether his numbers are precisely accurate for all networks, that this matter of cost is often overplayed in a way.

Senator INOUE. Since Mr. Smith is not here I will most certainly on behalf of the committee send him a questionnaire specifically on this article.

Mr. Sugrue.

Mr. SUGRUE. I agree with everything the chairman said. Indeed, I believe we are probably in the happy position where we agree with just about everything we have said together this morning.

Let me just add one or two observations. One is that Bell Atlantic, as the chairman said, has been very aggressive in employing new technologies. I have been at consumer presentations by Bell Atlantic personnel indicating that this form of regulatory relief

along the lines of the Burns bill would be very helpful in stimulating such further development.

Second, other telephone companies certainly feel rather differently in terms of their own deployment schedules.

Third, there is such a thing as narrow band fiber services. The trials that are going on out there now on fiber to the home in many cases are just delivering POTS, plain old telephone service, which provides perhaps a higher quality voice and low-speed data. However, they are not putting investment in the infrastructure for broadband switching of the interfaces which are really needed for a two-way broadband network.

I do not know what Mr. Smith was referring to, but fibers are fibers are fibers—there is another part of the infrastructure that needs to be considered.

Senator INOUE. I thank you very much, and thank you very much, gentlemen.

Senator BURNS. Could I follow up on that question, Mr. Chairman?

Senator INOUE. Of course.

Senator BURNS. In light of that, I guess we have been criticized along the way a little bit as trying to set industrial policy. We do not view that as setting industrial policy, and I guess I would ask the Chairman, Mr. Sikes, how he would respond to the critics.

Mr. SIKES. Well, I think it is good because as I think Tom Sugrue indicated that there are a lot of different forms of video dial tone. So, as a practical matter, whether you are talking about the narrow band approach or this broader band approach, where you could go toward full motion switched video—I mean, there is, I think, an important distinction to be made in what our sights should be set on and I think it should be set on this broadband, full-motion, high-definition sort of network.

With regard to industrial policy, I think it is important to understand, and the reason that I am perhaps less engaged on that issue than Secretary Sugrue is, is that the Government is now head over heels involved in this business. I mean, the Government has entry barriers; that is what we are here talking about today. The Government regulates prices. You know, some are artificially high to subsidize others which are artificially low.

We have consent decrees, we have got just a whole range; you know, we regulate depreciation schedules. So, what in a sense this bill is saying is for the Federal and State regulators, we order the priorities of your heavy involvement, because the bill additionally says remain heavily involved. So, it is not a question of our completely withdrawing.

Now I do have some differences of opinion in the sense that I believe strongly that if we create—the Congress in taking action on this bill and other legislation, the FCC and its work on open network architecture—if we create a public network that is a thoroughly modern, state-of-the-art platform for information, entertainment, and news and other providers, then I am convinced that we will make rapid progress, much more rapid progress than the Japanese, for example, envision in their 2015 or than the bill envisions in its 2015 target. And I believe that because this is a continental-

sized nation that hungers for entertainment, hungers for information, hungers for convenience.

It is a nation that has bred an extraordinarily able, fertile, computer software services sector. And if there was ever an occasion, if there was ever an occasion in the industry of this country where the "Field of Dreams" concept applies—build it and they will come—is true, it is right here. And so I think that 2015 misses the mark in part because it is too pessimistic.

Senator BURNS. Thank you.

Senator INOUE. Mr. Chairman and Mr. Secretary, I would like to also submit questions if I may for your consideration and response.

With that, I would like to thank both of you for appearing before us and sharing your thoughts with us.

Mr. SIKES. Thank you very much, Mr. Chairman.

Mr. SUGRUE. Thank you, Mr. Chairman.

Senator INOUE. Our next panel consists of the following: Mr. Michael Dertouzos, professor and director of the MIT Laboratory for Computer Science; Mr. Alfred Sonnenstrahl, executive director of Telecommunications for the Deaf, Inc.; Mr. Thomas Gillett, president, Gillett, Lehman & Associates; Mr. Clyde V. Prestowitz, Jr., president, Economic Strategy Institute; and Mr. Robert G. Harris, professor and chair, Business and Public Policy, School of Business Administration, University of California at Berkeley.

May I first call upon Professor Dertouzos?

STATEMENT OF MICHAEL DERTOUZOS, PROFESSOR AND DIRECTOR, MIT LABORATORY FOR COMPUTER SCIENCE, CAMBRIDGE, MA

Mr. DERTOUZOS. Thank you, Mr. Chairman. I would especially like to thank Senators Gore and Burns for giving me the opportunity to testify on a matter that I consider, and have considered, crucial and central to this Nation's welfare for the last 12 years.

Let me say at the outset that I have submitted my testimony and I will try to give some brief remarks.

Senator INOUE. Your testimony will be included in the record.

Mr. DERTOUZOS. Thank you, sir. My testimony flows from two streams of experience that I think are relevant here. The first one: as director of the MIT Lab for Computer Science, I have been working in this area with our good people for many years, and we have been dreaming about crafting and analyzing the kind of systems that are reflected in the bill. In fact, Senator Gore used the term, "the information marketplace." I had the privilege of coining that term 11 years ago in an article which is part of the record.

More recently, I have written a couple of lead articles, one in Technology Review and one in The Scientific American, and I have asked that these be made part of the record, because they discuss fairly extensively the kinds of uses that a system like this would have in the future.

The other stream of experience that comes here with me, is the chairmanship of the MIT Commission on Industrial Productivity where we spent, Mr. Chairman, about 100 man-years trying to understand why the United States has weakened and what might be done to regain the productive edge. And our book, "Made in Amer-

ica," as you may know, has circulated widely in six languages worldwide.

Let me move immediately to the confluence of these experiences that of the computer technologist and the chairman of the MIT Commission on Industrial Productivity. We concluded in that book that the time is right for American business and Government to begin developing a national information infrastructure which would eventually become a network of communication highways as important for tomorrow's business as the current highway network is for today's flow of goods.

I am therefore pleased to support with a great deal of enthusiasm and a sense of great urgency the Burns/Gore bill in both of these capacities, as a computer technologist and as a representative of the MIT study on U.S. industrial performance.

I want to touch on two issues, Mr. Chairman. First, Why must we wait until 2015 for this information infrastructure to come into place? The explanation that uses the Japanese target date as the U.S. target date is not persuasive. As you undoubtedly know, Germany and Singapore are moving on such infrastructures now. Germany is building on the old East Germany a broadband telephone system, leapfrogging the narrow systems, and Singapore by virtue of its small size and great technological prowess has a plan which is executing right now.

In addition, the European Community, with its nervous system project, is well underway to provide what many people there consider crucial to the business activities of the 12 member nations. The world is moving and I cannot understand why we must wait until 2015. I also think that Japan will have an information infrastructure at an effective stage of development and use long before 2015.

Let me remind you that the nation that is first in embedding this kind of information infrastructure in its fabric will be well ahead of other nations in deriving substantial economic benefits. We do not have to go too far into futuristic arguments. The mail, the business mail that we conduct every year is worth about \$40 billion, and if we could move that from a 5-day delay to a 5-second delay, I just let you imagine what the consequences would be for the \$5 or \$6 trillion of GNP activity in the United States. Just that alone. And of course, imagine the educational, health care, and all other benefits that would accrue to the citizens of this Nation through such a system.

Another thing, Mr. Chairman, there has been a lot of discussion about HDTV. HDTV becomes a nonissue with such a system. It is there for free, it is there on the margin. You just flip the levers to the right place, and you have HDTV, with all that this would bring. And I am not talking only about entertainment. There has been a lot of talk here today about video programming and entertainment. To me, that is going to be a fraction, probably a small fraction, of what will transpire many years from now on this system.

Let me, then, urge you to move faster, much faster, than you are now contemplating. The United States could well lose this information infrastructure today. I would like to move to the second and last topic of my comments, which is central to the bill.

I am sure that the crafters of the bill and all of us would like to see a free market instrument in this area, an exchange through which the millions of this Nation's people and organizations would freely buy, sell, and exchange information, information services, information labor, and so forth. It is therefore imperative that this information marketplace function like a true marketplace.

Now, the bill provides many of the safeguards and fair procedures that would be necessary for this to happen. In my opinion, however, it falls short of doing this in allowing the common carriers to engage in the content and in limiting them up to a percentage of the traffic. I have a different suggestion to make.

But first, let me say that this sounds to me as silly as if the highway act of the 1930's had empowered the United States to not only build its Interstate Highway System, but also to construct automobiles and also to carry produce over that highway system. I think limiting the flow to 25 percent does not make sense to me. Because I expect that with \$6 trillion of GNP and up, the activity that will be going on over this network will be huge. Computing today, without communications, is 10 percent of the GNP. If you add communications and all the other information-related activities that would help the normal business of goods and services, the ratio of the GNP that could flow or that could be affected by this system would be truly staggering.

So, I think limiting carrier involvement by content to 25 percent may sound small, but in reality will be large and strange. What I would like to suggest instead is that the common carriers, be they the telephone companies or a combination of the new cable activities, be empowered to offer any and all services they wish, but only provided they are common to all the users. Common—this is where I would put the restriction.

In other words, if they want to provide white pages, white-page directories, yellow-page directories, electronic brokers that are going to help people find where they want to go, then I think that would be a nice division. All the common substrate provided by the common carriers. And then let the periphery, the millions and millions of people and businesses, with their computers, act as a free marketplace and exchange their transactions both within corporations, across corporations, and personally.

In closing, let me say once again how important I think this bill is for the future of the United States. There is no doubt that viewed from today's perspective, this system appears threatening to many interests, in particular the publishers, the broadcasters, and the cable providers. To my thinking, these concerns are not well founded for the long-term welfare of the United States.

Let me just say briefly that electronic publishing, for example, will intensify, not reduce, the role of the publisher. Mr. Chairman, with this kind of a system reaching every home with a freeing up, a liberalization of the media, with the ability of everyone to publish and to be heard, we are going to have so much infojunk floating around that it is going to be truly frightening. We will have to be shielded from all this unnecessary information to each of us. So, the publishers will have to sieve through the mud, select the diamonds, package them, and give them to us.

The role of the publisher is not going to go away; it will intensify. Similarly with all the other people who are packaging information for entertainment and other purposes. Let us not, then, take a short-term view, one that would slow this information infrastructure from going forward. Its potential benefits are so big and so many for the people of this country that, if we take a long-term view, everyone will win.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Dertouzos follows:]

PREPARED STATEMENT OF MICHAEL L. DERTOUZOS

wish to thank the committee members and particularly Senators Gore and Burns for the opportunity they have given me to testify on a matter that I consider crucial and central to this nation's future welfare.

My testimony flows from two streams of experience: First, as leader of the MIT Laboratory for Computer Science, a center of some 500 people engaged in a broad program of research that spans computers and communications, I have been professionally involved in dreaming about, crafting and analyzing the systems that are at the heart of this Bill. In particular, I published my first vision of electronic highways for the U.S. eleven years ago under the title "The Information Marketplace" in *Electronic Mail and Message Systems Proceedings of the AFIPS Workshop on Technical Policy Perspectives*, December 1980. More recently I have published two relevant articles on the same subject following a decade of now experiences. These are entitled "Building the Information Highway" and "Communications, Computers and Networks" and are the cover story and lead article, respectively, of the January, 1991 issue of *Technology Review* and the September 1991 special issue of *Scientific American*. With your permission, I would like to enter all three articles into the record as part of my testimony.

The second stream of experience relevant to this Bill is the MIT Commission on Industrial Productivity which I chaired and which, starting in 1986, expended some 100 person years studying weaknesses in U.S. industrial performance and ways in which the U.S. could regain the productive edge. The outcome of this study is the book "Made in America; Regaining the Productive Edge", which has been translated into 6 languages and has circulated widely here and abroad.

The essence of my testimony is captured in the following recommendation from the MIT book "Made in America":

"* * * the time is right for American businesses and government to begin developing a national information infrastructure, which would eventually become a network of communication highways as important for tomorrow's business as the current highway network is for today's flow of goods."

I am therefore pleased to support with a great deal of enthusiasm and a sense of urgency the Burns/Gore Bill in both of my capacities as a computer technologist and a representative of the MIT study on U.S. Industrial Performance.

But why must we wait until 2015 for this Information Infrastructure? The explanation that uses the Japanese target date as the U.S. target date is not a persuasive argument. As you undoubtedly know, Germany and Singapore may be well ahead of this timetable—the former because in rebuilding the Communications Infrastructure of the old East Germany will go directly to the broadband systems (ISDN) discussed in the Bill and the latter because it is small and progressive and has a well thought out action plan underway. Moreover, the EEC's "Nervous System" is a program under way, viewed by many as a key to linking commercially the twelve member nations of that community. I also think that Japan may have its own system at an effective stage of development long before 2015.

Senators, let me remind you that the nation that is first in embedding this kind of an Information Infrastructure in its fabric, will be well ahead of other nations in deriving substantial economic benefits; indeed, benefits that are hard to copy by others. Imagine for example, what would happen if the business mail of this nation that costs some \$40 billion annually, would go from a 5-day delay to a 5-second delay. Imagine further how the nation's businesses would function if they could carry out their internal activities and their transactions with suppliers faster and better than they do today, and without the restrictions placed upon them by geographical barriers. And imagine the educational, health care and other benefits that would accrue to the citizens of this nation by personalizing and dispensing services across this new Information Infrastructure. All these benefits are on top of and beyond the information/entertainment gains that would be possible via electronic pub-

lishing and broadcasting. Finally, issues like HDTV would become non-issues with these broadband highways in place, because HDTV would be available, on the margin of a broadband system—with all the benefits that this technology would bring to buying goods and services from a distance, to video entertainment and to many other areas.

Let me then urge that you move faster, indeed much faster than you are now contemplating. The U.S. could well use this information infrastructure today!

Moving on to another central concept of the Bill, I am sure that we would all like to ensure that the U.S. information infrastructure will be a free-market instrument. In other words, it must be an exchange through which the millions of the nation's people and computers will freely buy, sell and exchange information, and information intensive work. It is therefore imperative that the information marketplace, as I like to call this aggregate of people, computers, and broadband communication systems, function like a true marketplace.

The Bill, provides many of the safeguard and fair procedures that will be necessary for this to happen. It falls short, however, of this goal in that it allows the telcos to engage in the content of the information and services being exchanged. Using a fraction of the total content to limit this engagement is not a suitable limit, in my opinion, because it sets the central information carrying agencies in direct competition with the individuals and organizations that will be using the medium. This is equivalent to the absurdity of having empowered the U.S. through the highway act of the 1930s to not only build highways but also to engage in the construction of vehicles and in carrying out people and goods over these highways, up to 25 percent of the total traffic!

Let me instead suggest a measure that I think will better serve the national good. The telcos, beyond being the carriers, of information over the broadband networks of tomorrow, should also be allowed to engage in any and all services they wish to provide, as long as these services are common to and needed by all users. This would mean, for example, services equivalent to today's white and yellow page directories, and new services like electronic brokers and agents that help people find what they want. It would also mean cataloguing for common use the many common conventions that specialized groups will need in order to communicate with one another, e.g. a few thousand distinct Electronic Forms for buying and selling specific products and services. Significantly, the telcos should not create these conventions. That should be the free-market task of specialized groups representing the buyers and sellers of these specific products and services.

In closing, let me say once again how important this Bill is for the future of the United States. Computing today represents more than 10 percent of the nation's GNP. Together with communications and the many services that could use this system, the fraction of the U.S. GNP that would directly benefit from such a national information infrastructure could be truly staggering. There is no doubt, that viewed from today's perspective such a system would appear threatening to many interests, for example, those of publishers and broadcasters, including the cable providers. To my thinking these concerns are unfounded. Electronic publishing, for example, will intensify, not reduce, the role of publishers. They will still have to protect us from the massive infojunk that will proliferate over the broadband networks by selecting, editing, publishing and distributing high quality knowledge suited to their customers. Let us not then take a short term view that might slow down this information infrastructure from going forward. It's potential benefits are so big and so many for the people of this country, that if we focus instead on the long term, everyone will win!

Senator INOUE. Thank you very much, Professor.

And now, may I call upon Mr. Alfred Sonnenstrahl. And, for the record, may I have your name, madam?

Ms. DEEGAN. Deegan, Alice Deegan.

STATEMENT OF ALFRED SONNENSTRAHL, EXECUTIVE DIRECTOR, TELECOMMUNICATIONS FOR THE DEAF, INC., SILVER SPRING, MARYLAND; ACCOMPANIED BY ALICE DEEGAN, SIGN LANGUAGE INTERPRETER

Mr. SONNENSTRAHL. Thank you, Mr. Chairman, for the privilege to be testifying before your committee today. My organization is Telecommunications for the Deaf, Inc., TDI. I am the executive director. TDI is a 23-year-old, nonprofit organization advocating tele-

phone, television, and signal accessibility for deaf, hard-of-hearing, and speech-impaired citizens. We are located in Silver Spring, MD, and currently represent over 15,000 consumers in all of the 50 States.

I am very pleased to be here today to give testimony on S. 1200 before this committee, which has a track record of supporting our efforts. TDI conducts nationwide conferences, forums, and seminars to encourage public awareness and develops specifications on the accessibility of visual telecommunications. Manufacturers, service providers, regulators, and consumers all participate in these meetings. Some of the members of this prestigious committee have participated at some of those sessions.

Senator Inouye, thank you very much for your help with the 911 conference that we held last November. It was very successful. The Senate Committee on Labor and Human Resources estimates approximately there are 24 million hearing-impaired and 2.8 million speech-impaired individuals in the United States. The demographics of an aging population naturally will increase these numbers over time.

S. 1200 is an exciting bill for the deaf, hard-of-hearing, and speech-impaired community for several reasons. First of all, it establishes a clear national telecommunications policy leading to the universal deployment of a broadband fiber optic network within the very near future. Second, it enhances the capabilities that a public switch network can provide. A public broadband network will give people with disabilities access to a wide range of services and employment opportunities which are not currently available to them. Three, the enhancements available through a broadband public switched network will have a dramatic equalizing effect on the availability of our Nation's resources.

The enhanced public switched network will break down economic, educational, and social barriers which can inhibit the speech- and hearing-impaired people from reaching their full potential. This kind of an intelligent switched network could feature conveniences for people in handling everyday errands more efficiently, such as shopping, banking, education, and medical consultations. Additionally, this enhanced network could provide support, expanded for 911 emergency services, which would enable all emergency service providers the ability to handle emergency situations in a more proficient manner.

Expanded opportunities for telecommuting could give people with disabilities the ability to remotely interact in the workforce in ways not thought of today, without having to travel to work. Deaf and hard-of-hearing people will have the ability to engage in conversations using signing or lipreading, or perhaps sharing photos, home videos, drawings, and other graphics.

For visually impaired consumers, automated speech-to-text or text-to-speech functions could be invaluable. I submit, Mr. Chairman, that our Nation cannot afford to ignore this great human potential.

It is my belief that a person with a disability, who may be more at risk of becoming socially or physically isolated, can actually receive even greater benefit from a variety of interactive tele-

communications services than people without disabilities, who would also benefit.

As you can imagine, using the telephone often presents a problem for deaf, hard-of-hearing, and speech-impaired individuals. Few people realize that Alexander Graham Bell really was trying to invent a hearing aid for his deaf wife when he inadvertently invented the telephone.

Now few people could dispute the fact that the telephone is a wonderful invention, having a far-reaching positive impact on our society. Unfortunately for a deaf person, when they are in the process of applying for a job, often the first question asked of them is, can you use the telephone? Or, do you have unlimited access to the information which is provided over the phone. And unfortunately that person has to say no, because the telephone today is designed for a hearing person and availability of information is very restricted.

Oh, yes, we have made great strides with the passage of the Americans with Disabilities Act, ADA, and its requirement that Telecommunications Relay Services, TRS, be implemented throughout the country by July 26, 1993, a date that the telephone industry given its current rate of implementation will easily meet.

Even then, deaf people will not enjoy the same personal communications experiences as hearing people. By using text telephones, they must type through a communications assistant at the maximum rate of 60 words per minute, which is time consuming and ineffective, especially for those who are American Sign Language users, who usually type about the rate of 20 words per minutes.

Title IV of the ADA calls for advanced technology for higher effectiveness and efficiency. Due to the interactive capability of the video and in the public switched network, deaf, hard-of-hearing, and speech-impaired users will be able to interact visually with the same ease and effectiveness as hearing people communicate verbally.

In other words, S. 1200 is a necessary complement to the Americans with Disabilities Act. We know that technology exists to provide visual communications. I experienced a video phone system in Cerritos, CA, where currently a large experiment is being conducted by using broadband switching and fiber optics and it worked very well. The picture quality is good, if not better than that of a normal television program, and there is none of the jerkiness that plagues most existing visual telecommunications systems; also, this renders impossible the ability to read lips or understand the rapid hand movements that are used when people are using sign language.

Most of the fiber optics currently being installed today by the phone companies in routes can carry both large amounts of data and many simultaneous transmitted telephone conversations. Fiber is economical for the telephone companies to install in these types of applications. However, less broadband capacity is being deployed in the local loop, the last link in the telephone network to the home or business, because the telephone company is restricted by law from providing the kinds of broadband communications services customers most want.

Anytime the users of technologies are artificially restricted in this manner, then the deployment will be slowed down considerably. With the passage of S. 1200, telephone companies would begin to bring switched broadband capacity to the home. In fact, telephone companies have said they would likely double the speed, or halve the time, in which technology would be available to the general public.

For example, say 15 to 20 years instead of 30 to 40 years. Certainly without the changes in the law like those proposed here today, many of us will not see the successful deployment of the infrastructure in our lifetimes. Mr. Chairman, we cannot afford to wait that long.

Now, I would like to add something to be submitted to the record. In addition to the 24 million hearing-impaired Americans, roughly 20 million Americans use English as a second language. Approximately 10 million Americans are learning disabled, and 40 million Americans are illiterate. Altogether we have 90 million Americans who could benefit from closed captioning and currently 90 percent of cable programs are not closed captioned.

TDI supports this legislation because we see the benefits of a broadband communications infrastructure as a necessity for visual telecommunications for deaf people. We know the technology is here and it works, because we have seen it. The challenge is to make it generally available at prices people can afford. The quickest way to do that is to take the restrictions off the technology and open the market to competition. That is exactly what this infrastructure bill does, and what is mandated by the Americans with Disabilities Act.

Thank you.

Senator INOUE. Mr. Sonnenstrahl, I thank you very much for your most thoughtful and convincing statement. Please be assured that I will call upon my colleagues to study your testimony very carefully.

And now may I call on Mr. Thomas Gillett.

**STATEMENT OF THOMAS GILLETT, PRESIDENT, GILLETT,
LEHMAN & ASSOCIATES, ST. LOUIS, MO**

Mr. GILLETT. Mr. Chairman, my name is Thomas F. Gillett, and I am the president of Gillett, Lehman & Associates, a telecommunications infrastructure consulting firm that is a division of Brooks Telecommunications Corp., a recently formed company comprised of individuals with senior executive experience in both the telephone and cable television industries.

My 22 years of telecommunications experience span both the cable television and telephone industries. I have served both at Cable Television Laboratories and as well at GTE, directing their Cerritos project. As a strong believer that we need a vision for serving America now, I congratulate this committee for addressing this critical yet complex need. In these remarks, I will highlight four areas that I suggest should be included as some of the key considerations of such a vision.

Technology-led versus market-driven. In our rapidly changing technological world, it is very risky to predict, plan, or legislate long-term technology developments. Therefore, I suggest that your

legislation should not be technology led, but market driven. Concentrate on directing what services to bring to America, not what technology to deploy.

Lead our Nation in the 1990's through your legislated direction on information age quest similar to our Nation's previously successful mission to put a person on the Moon by the end of the 1960's. Focus your efforts on the services our citizens need and establish an aggressive timetable to meet those needs everywhere by the end of this decade.

Do not tolerate solutions that would make areas of our country wait until the next millennium before receiving critical telecommunications services that are needed now for improving quality of life and helping economic development: services such as medical imaging, high-speed processing, work at home, and, in my opinion the most important, distance learning.

By focusing our efforts on being able to deliver those services, we will put in place telecommunications infrastructure that can provide an unlimited set of information age services.

Information rich/information poor. Members of our society must not be permitted to become segregated by its ability or inability to access information. Every city, town, and village should have equivalent access to information age services. Do not be content with a plan that will not complete information highways until the year 2015. There is no area in American that must be relegated to wait 25 years before entering the information age.

In the major cities, it is likely that competitive forces will cause an information-rich telecommunications infrastructure to be deployed, but for the vast area of our country beyond our largest 25 to 40 cities, we will need cooperation, not competition. While there is sufficient economic opportunity in major cities to be able to support facilities competition, that is not true in the vast majority of our towns and villages.

Most homes in America are now passed by both telephone company and cable company facilities. Thus, we already have in place a nearly ubiquitous narrow band and broadband capability. With a few cost-effective enhancements to those existing networks, and some cooperation between those industries, we would soon be able to deliver any information service virtually anywhere. Nationwide equal access to information is a realizable goal for this decade.

What then is the right network design to achieve in this decade a ubiquitous information age delivery system? There is a common network architecture solution that meets both near and long-term goals of simultaneously enhancing today's services and positioning for the future. That solution is called a fiber hybrid network, and both telephone companies and cable companies are actively deploying that now.

Telephone companies are installing fiber from their central offices to remote electronic devices in neighborhoods where existing copper facilities are completing the circuit to the home or business. Cable TV is installing fiber from their head ends to remote electronic devices in neighborhoods where existing coaxial facilities are completing the circuit to the home. From these two platforms, either working independently or communicating together, any information age service can be delivered.

The technology portion of your legislation should concentrate on the deployment of these high-powered telephone and cable TV fiber hybrid backbones. The fastest way to get our country into the information age is not by replacing all of our existing telecommunications infrastructure, but by concentrating on the critical fiber backbones and supporting and encouraging enhancements to our existing telecommunications highways.

And now to the sensitive area of paying for it. Fortunately, fiber is the cost effective long distance communications technology and fiber hybrid networks are already in many situations the right economic choice for local distribution by both telephone and cable companies. Therefore, fundamental business economics favor our country evolving to the right information age infrastructure without the need for massive governmental funds.

If there is a need for any social governmental incentives, it would be to make certain that these capabilities are deployed equally—and I mean equally in terms of both technical capabilities and timing throughout all of America, even to those towns and villages that might not have the existing telephone and cable TV demand to warrant independent deployment in the near future of any fiber hybrids.

For developments beyond the fundamental hybrid, I suggest two approaches. First, those customers who want enhancements pay for them. For example, in 1991 I conducted my consulting business out of my home. I would gladly have paid for ISDN functionality to my home. In this day and age of purchasing computers, laser printers, and faxes, it would certainly seem reasonable to expect me to cover the capital costs of the electronics to get ISDN to my home. And most importantly, it would have been very inappropriate for the retired couple living next to me to have their basic telephone rates reflect a subsidy for my high-technology needs.

Second, I suggest that you legislate a revenue carrot to encourage information age services instead of a cost subsidy to cover equipment deployment. To encourage the actual development and offering of services, not just the deployment of technology, offer to subsidize the purchase of distance learning, medical imaging, and other socially needed services. Spur the demand for the services instead of encouraging the supply of equipment.

In closing, I would like to offer up a quote from someone in the 1950's who had his own visionary views of how to improve the quality of life in America. Frank Lloyd Wright in his 1958 book, "The Living City," said:

Everywhere now, human voice and vision are annihilating distance, penetrating walls. Wherever the citizen goes—even as he or she goes, they have information, lodging, and entertainment. They may now be within easy reach of general and immediate distribution of everything one needs to have or to know. All that may be required as one lives becomes not only more worthy of his personal freedom, but convenient now wherever one may choose to make his or her own home.

Government and industry have the opportunity today to put in place the electronic highways that would make possible a quality of life vision such as Mr. Wright's. I hope that my comments will help you architect such a vision.

Thank you.

[The prepared statement of Mr. Gillett follows:]

PREPARED STATEMENT OF THOMAS F. GILLETT

My name is Thomas F. Gillett. I am the President of Gillett Lehman & Associates, a Telecommunications Infrastructure Consulting firm that is a division of Brooks Telecommunications Corporation. I am also a Senior Vice President and Director of Brooks, a recently formed company comprised of individuals with senior executive experience in both the telephone and cable television industries.

My 22 years of telecommunications experience span both the cable television and telephone industries. I have held several positions where my responsibilities included planning and deploying new telecommunications technologies. I have been directly involved with many complex infrastructure issues; as either a consultant serving telecommunications infrastructure owners, providers and users; as a Vice President at Cable Television Laboratories responsible for Business Development and Technology Transfer; and as the person at GTE responsible for its Cerritos project.

I am honored to have been invited here to share with you my views on what I see as some of the key issues challenging the development of a comprehensive telecommunications infrastructure policy for America. As a strong believer that we need a vision for serving America now, I congratulate this committee for addressing this critical, yet complex need. In these remarks I will highlight four areas that I suggest should be included as some of the key considerations of such a vision.

The areas are:

1. Technology Led versus Market Driven
2. Information Rich/Information Poor
3. Network Design, and
4. Paying For It

TECHNOLOGY LED VERSUS MARKET DRIVEN

In our rapidly changing technological world, it is very risky to predict, plan, or legislate long term technology developments. For example, it is not inconceivable that advancements in the wireless telecommunications arena—such as digital, micro-cellular, personal communications services, and DBS satellite—may some day make a wired-to-the-home concept archaic. Therefore, I suggest that your legislation should not be technology led, but market driven. Concentrate on directing what services to bring to America, not what technology to deploy.

I lead our nation in the 90's, through your legislated direction, on an information age quest similar to our Nation's previously successful mission to put a person on the moon by the end of the 60's. Focus your efforts on the services our citizens need and establish an aggressive timetable to meet those needs everywhere by the end of this decade. Your laws should establish the services mandate of this country and we infrastructure planners will translate those needs into the appropriate network designs and functionalities so that they will be delivered soon. While some technological directions and incentives may be required, do not attempt to engineer America's infrastructure via legislation. Instead, demand of our telecommunications industries the types of telecommunications services that our Country needs.

Do not tolerate solutions that would make areas of our Country wait until the next millennium before receiving critical telecommunications services that are needed now for improving quality of life and helping economic development; such as medical imaging, high speed processing, work at home, and, in my opinion the most important, distance learning.

In fact your mandate need only concentrate on those very few key services. By focusing our efforts on being able to deliver those services we will put in place telecommunications infrastructure that can provide an unlimited set of information age services.

For example, your distance learning mandate could require that by the end of this decade we must have in place the capability to electronically deliver learning and training services to wherever our citizens study, work or live so that each individual can pursue her or his professional and personal interests. The functionalities we would put in place to meet the critical national needs of education would provide the same electronic highways over which an unlimited array of other information age services could be delivered.

INFORMATION RICH/INFORMATION POOR

Members of our society must not be permitted to become segregated via its ability, or inability, to access information. Information age services must be mandated to be available equally across our land. Every city, town and village should have equivalent access to information age services. Do not be content with a plan that will not "complete information highway(s)" until the year 2015. There is no area in America

that must be relegated to wait twenty-five years before entering the information age.

In the major cities it is likely that competitive forces will cause an information rich telecommunications infrastructure to be deployed. But for the vast area of our Country, beyond our largest 25 to 40 cities, we will need cooperation, not competition. While there is sufficient economic opportunities in major cities to be able to support facilities competition, that is not true in the vast majority of our towns and villages.

Most homes in America are now passed by both telephone company and cable company facilities. Thus we already have in place a nearly ubiquitous narrowband and broadband capability. With a few cost effective enhancements to those existing networks, and some cooperation between those industries, we would soon be able to deliver any information service virtually anywhere. Nationwide equal access to information is a realizable goal for this decade.

What, then, is the right Network Design to achieve in this decade a ubiquitous information age delivery system?

A telephone or cable company network planner is faced with a significant challenge. He or she must develop technology migration and infrastructure deployment plans that put in place systems that balance the need to improve the quality of our Country's two existing residential mega-telecommunications services (talking on the telephone and watching television); that serve the complex needs of our businesses and governments; and that position the network to be able to quickly and cost effectively deliver new services. Incredibly there is a common network architecture solution that meets both those near and long term goals of simultaneously enhancing today's services and positioning for the future.

That solution is called a fiber hybrid network and both telephone companies and cable companies are actively deploying that now.

In the higher levels of the network and to major high capacity locations, such as medical centers, super computer locations, and large businesses, fiber optic facilities are continuing to be installed.

But, perhaps more importantly, access to those fiber backbones is being improved. Telephone companies are installing fiber from their central offices to remote electronic devices in neighborhoods where existing copper facilities are completing the circuit to the home or business. Cable TV is installing fiber from their headends to remote electronic devices in neighborhoods where existing coaxial facilities are completing the circuit to the home. From these two platforms, either working independently or communicating together, any information age service can be delivered. These fundamentally similar network topologies each utilize fiber hybrid designs that result in both cost effectively improving the quality and diversity of today's narrowband and broadband networks and also providing the ideal platform for future developments.

For example, telephone companies, from their fiber/copper twisted pair hybrid network configuration, are positioned to serve many needs. For major businesses they can extend fiber directly to their premises, for other businesses they can install electronics to provide digital services, and even for homes, they could install ISDN electronics so that there could be digital to the home. Thus, for those customers that wanted it, and only for those customers that want it, additional investments could be made to put the appropriate capability in place. This concept of focused investments aimed at the particular customer who demands additional functionality is very critical to the How to Pay for It section I will address in a moment.

On the cable television fiber/coaxial hybrid there will also be many enhancements. Capacity is growing to 1 gigahertz, digital transport is being added, two-way capabilities are expanding, and compression will soon be deployed. And, by the way, those unfamiliar with comparing a cable TV system's capacity to that of a payphone system: with today's technologies, a conservative estimate would be that a one gigahertz cable system has the equivalent capacity of approximately twenty thousand basic rate ISDN lines. I would like to emphasize that our Country already has a broadband to the home capability in place. With proper enhancements it can soon play a very important role in serving America with information age services.

The technology portion of your legislation should concentrate on the deployment of these high powered telephone and cable TV fiber hybrid backbones.

I believe that your need to legislate telecommunications infrastructure is very similar to the earlier need for interstate highways. Government leaders saw the requirement for putting into place massive highways to criss-cross our land in a way to bring better transportation close to our citizens and to complement and stimulate the existing local road systems. That interstate legislation put in place high capacity, high speed transport that spanned America. However, it did not mandate a single lane expressway into every garage; but instead stimulated more transportation

existing roads. I believe that example is a good one to follow. The fastest way to get our country into the information age is not by replacing all of our existing telecommunications infrastructure, but by concentrating on the critical fiber backbones and supporting and encouraging enhancements to our existing telecommunications highways.

And now to the sensitive Area of Paying For It.

Fortunately, fiber is the cost effective long distance communications technology and fiber hybrid networks are already in many situations the right economic choice for local distribution by both telephone and cable companies. Therefore, fundamental business economics favor our Country evolving to the right information age infrastructure without the need for massive governmental funds. If there is a need for any social, governmental incentives it would be to make certain that those capabilities are deployed equally - and I mean equally in terms of both technical capabilities and timing - throughout all of America, even to those towns and villages that might not have the existing telephone and cable TV demand to warrant independent deployment in the near future of any fiber hybrids.

With this approach you have balanced obligations to today's telephone and cable TV users with tomorrow's information users. In fact, much of the cost of accelerating deployment of these hybrids can be funded by the enhanced quality and thus reduced costs offered by these network to existing telephone and cable TV customers.

For developments beyond the fundamental hybrid, I suggest two approaches.

First, those customers who want enhancements pay for them. For example, in 1991 I conducted my consulting business out of my home. I would gladly have paid for ISDN functionality to my home. In this day and age of purchasing computers, laser printers, and faxes, it would certainly seem reasonable to expect me to cover the capital costs of the electronics to get ISDN to my home. And, most importantly, it would have been very inappropriate for the retired couple living next to me to have their basic telephone rates reflect a subsidy for my high-tech needs.

Secondly, I suggest that you legislate a revenue carrot to encourage information age services instead of a cost subsidy to cover equipment deployment. To encourage the actual development and offering of services, not just the deployment of technology, offer to subsidize the purchase of distance learning, medical imaging and other socially needed services. Spur the demand for the services instead of encouraging the supply of equipment.

In closing I would like to offer up a quote from someone in the 1950's who had his own visionary views on how to improve the quality of life in America.

Frank Lloyd Wright, in his 1958 book *The Living City* said:

Imagine now, freeways broadened * * *
 Imagine these great highways of generous * * * width * * *
 Giant roads now themselves great architecture * * *
 Endless the series of diversified units—as one passes by small farm units, roadside markets, garden-schools, beautiful spacious dwelling places * * *
 And imagine * * * units so arranged and integrated that every citizen may choose any form of production, distribution, self-improvement, enjoyment * * *
 The city becomes the nation
 Everywhere now human voice and vision are annihilating distance—penetrating walls. Wherever the citizen goes (even as he or she goes) they have information, lodging, and entertainment. They may now be within easy reach of general and immediate distribution of everything one needs to have or to know: All that may be required as one lives becomes not only more worthy of personal freedom but convenient now wherever one may choose to make his or her home.

Government and industry have the opportunity today to put in place the electronic highways that could make possible a quality of life vision such as Mr. Wright's. I hope that my comments will help you architect such a vision.
 Thank you.

Senator INOUE. I thank you very much, Mr. Gillett.
 May I now call upon Mr. Prestowitz?

**STATEMENT OF CLYDE V. PRESTOWITZ, JR., PRESIDENT,
 ECONOMIC STRATEGY INSTITUTE, WASHINGTON, DC**

Mr. PRESTOWITZ. Thank you, Mr. Chairman. I would like to submit my statement for the record. At this point in the hearing it is very difficult to say anything that has not already been said, so I will just make a few very quick points.

Over the last 10 years of my experience in Washington, I have heard a great deal of discussion about industrial policy, and it has been repeated again and again like a mantra that we do not want to pick winners and losers in this country. But the fact is, *de facto* in this field, we are picking a loser because of the way in which our crazy-quilt pattern of regulations and judicial rulings is effectively barring the extension of technology at the pace that Mr. Dertouzos mentioned.

I agree with him. Why do we have wait until 2015? The technology is there. We could be using it right now. In particular, it seems to me that we have talked about the cost of deploying this technology, but no one has talked about the cost of not deploying the technology.

My institute, the Economic Strategy Institute, issued a report this week which points out that through deployment of this technology, the U.S. economy would gain, at a minimum, between \$200 and \$300 billion in additional GNP over the next 10 to 15 years, and would gain, at a minimum, between .2 and .5 of 1 percent annual productivity growth.

Given that, in the discussion of competitiveness between ourselves and Japan and Europe, it is constantly pointed out that the United States is lagging in productivity growth, here is an easy simply way to remedy that problem. It has already been pointed out that other nations have perceived this same opportunity and are proceeding to deploy it.

Let me close with just a comment, a very practical experience that I had early in my business life. I began working for a company called Scott Paper Co., and when I was working for Scott Paper Co. in the late 1960's, Procter and Gamble had introduced a new product. Scott Paper Co., you know, makes the Scott towel. They had about an 80-percent market share in the late 1960's. Procter and Gamble introduced a new product called Bounty.

The Bounty towel began to eat up the market share of Scott towels. Every month you could see the share lines dropping, and it was very simple to do a straight-line projection and see that Scott Paper would go out of business. So, we did a lot of product development to try to figure out how save the Scott towel, and we came up with a new product, which, however, would have required new investment to produce the new product.

And one of the amazing things to me was that in making the justification to make that new investment to improve the Scott towel, the financial bean counters in our company wanted to impose on the investment a cost for displacement of the equipment that was making the old Scott towel. And it just seemed crazy to me because it was clear that if we did not make the investment, we were out of business. And yet the bean counters were telling us, well, we have to be careful because we will make this investment and it might cost us something on the depreciation of the old machines.

I think I feel a similar situation here. We are depriving ourselves, potentially, of tremendous opportunity, tremendous growth in potential—not only human potential but economic potential, cultural potential—because we are obsessed by bean counters.

Thank you very much.

[The prepared statement of Mr. Prestowitz follows:]

PREPARED STATEMENT OF CLYDE V. PRESTOWITZ

My name is Clyde V. Prestowitz. I am President of the Economic Strategy Institute. Accompanying me is Robert Cohen, author of the recent study published by the Economic Strategy Institute entitled *The Economic Impact of Broadband Communications on the U.S. Economy and on U.S. Competitiveness*.

Since ESI was formed in 1988, it has been dedicated to the task of defining an American agenda for the 21st century. The Economic Strategy Institute has developed an eight point economic strategy to bring a competitive America into the 21st century. This strategy includes:

- *Sound Macroeconomic policy.* We must shift resources from consumption to investment in the United States. This requires changes in U.S. to and budget policy to create a high-savings economy.

- *A 21st Century Infrastructure.* Not only do we have to repair our deteriorating roads, bridges and other public facilities, but we must create a broadband information highway for America.

- *Government policies which promote industrial and technological leadership.*

- *New financial structures.* These new structures must forge closer relationships between the corporation and access to capital, particularly long-term, patient capital.

- *Health care Reform.* Rising health care costs not only have implications for the quality of life of our workforce, but increasingly are a key factor in the competitiveness of U.S. industry.

- *A new System of Labor Law.* This new system must be predicated on cooperation rather than conflict between government, business, and labor.

- *Education.* We must fix the inadequacies in the American school system and enter the 21st century with an educated workforce second to none in the world.

- *Trade Policy.* The United States needs a pragmatic, self-interested trade policy based on application of the broad concept of reciprocity codified in the GATT.

As you will note, one key link in this eight link economic strategy is a commitment to a 21st century infrastructure for the United States. As with any chain, it will only be as strong as its weakest link. In the information-intensive 21st century, we are going to need optical fiber networks, digital libraries, interactive television and education, high speed digital communication and many more information applications. Let me be more specific as to why this is so important.

COMMUNICATIONS AND INFORMATION: AN ECONOMIC ENGINE TO PULL AMERICA INTO THE 21ST CENTURY

The simple answer as to why an information-intensive infrastructure for America is so important is that without it we will not be able to compete effectively in the global economy of the future. An interactive broadband network has critical implications for almost all facets of life that are important to an economy with rising expectations.

It is important to bear in mind that the U.S. economy is already information-based. Fifty-five percent of employment in the United States today is dependent on information.¹ With the coming of the personal computer, more people are using computers. In ten years, the use of computers in our country has grown by a factor of fifty.² Twenty-four percent of the nation's 94 million households are now equipped with personal computers.³

Recent studies are beginning to document just how critical telecommunications is to our national economic well-being. One study by the National Economic Research Associates, Inc. found that usage of telecommunications by the U.S. economy increased by 75 percent between 1977 and 1985.⁴

Because of the central nature of telecommunications issues to the future of our economy, ESI recently undertook a study to attempt to determine what the economic impact of a national broadband communications network would be on our economy and competitiveness. I have with me a copy of the entire study, which I have appended (see Appendix 2) to my statement and ask that it be inserted into the record of this hearing. I hope that you will read it in its entirety. Right now, I want to summarize our findings. We believe they are significant and speak to the justification for passage of S. 1200 without further delay.

¹Karen Wright, "The Road to the Global Village," *Scientific America*, March 1990, pp. 84-84.

²Statistical Abstract of the United States, 1990, U.S. Department of Commerce (Bureau of Census), Table 1340, p. 759.

³The NTIA Infrastructure Report: Telecommunications in the Age of Information, U.S. Department of Commerce, October 1991, p. 122.

⁴*Ibid.*, p. 22.

Our main focus in the study was on corporate broadband networks. The main finding of our study is that U.S. industries could add as much as \$320 billion dollars in net new output to the national economy over the next 16 years if they invest in broadband communications. These gains would be added to the \$180 billion that is already expected from a continuation of the present investment trend in such communications. Achieving the additional \$320 billion in new output is dependent, however, on business having access to a national broadband network.

Gains of \$320 billion dollars in national output would mean an improvement of about 6.4 percent in U.S. productivity over the next 16 years. This would be a gain of about .3 percent per year over expected productivity growth which has averaged about 1 percent per year in the 1980s.

The main conclusion of our study is that without changes in the present regulatory environment, the gains projected in our study are not likely to occur. Federal and state regulators have to find a way to facilitate investment in broadband communications that would permit corporations to readily link all of their facilities to a national broadband network.

Our study highlights a number of instances where we found that broadband communications have already had a positive impact on business efficiency. These include, for example:

- Kodak, where workload per worker was increased, manufacturing cycle reduced, manufacturing accuracy and speed increased, and quality control improved;
- Johnson and Johnson, where the network was used to institute companywide video conferencing and data communications, centralize corporate accounting, and coordinate product development;
- Steelcase, where a broadband network was used to improve employee training;
- Empire Blue Cross, where a broadband network was used to improve health care efficiency.

There are many other examples cited in our study. They are impressive and point the way to a sound and competitive American economy in the future.

WHY WE NEED TO ACCELERATE DEPLOYMENT OF A NATIONAL BROADBAND NETWORK

You might ask why do we need to pass S. 1200 if businesses are already investing in modernizing our communications infrastructure? If the technology is advantageous and the services beneficial, than the necessary investments will be made and the network will gradually get built.

The fallacy in this thinking is that it ignores the importance of timing in putting a national broadband network in place. If current trends continue, it will take the United States until the 2040 to have a national broadband network in place. The Japanese are implementing plans to have a broadband network in place to reach every school, business, and home by 2015.⁶ The Europeans have also adopted a long range plan for developing their telecommunications infrastructure. This includes projects like "Telekom 2000" undertaken by the Deutsche Bundespost Telekom to offer cable television, ISDN, and other high-technology services in a seven-city trial of fiber-to-the-home during 1991 as part of a plan for all of reunified Germany.⁶

In short, the nations of the world who succeed in putting in place a broadband national network first will have a critical competitive advantage over their international competitors. The ESI study underscores how important this can be in achieving productivity growth in an economy. Modernized broadband communications infrastructure will be equally important in addressing the national challenges we face in health care, education, and energy conservation and environmental quality. Finally, the first nation to build a national network will have a lead in the development and marketing of the transmission equipment for it, the customer premise equipment needed to display and process information, and many new services and related software necessary for transmission over the network.

One of the most attractive aspects of moving now to adopt a strategy to put in place a national broadband communications network is that we can do it without adding to the federal budget deficit. Changes in regulatory and depreciation provisions for the telephone companies can unleash rapid investment in communications infrastructure modernization. The Bell Operating Companies are currently investing \$6 billion dollars in foreign telephone concerns and billions more in non-telecommunications concerns.⁷ The decision by the telephone industry to make these overseas investments is strategically sound from their perspective. Local telephone service, largely voice service, is growing slowly at approximately 3 percent per year,

⁶ Ibid., p. 198.

⁶ Ibid., p. 199.

⁷ See Appendix 1.

and the telephone industry's rate of return in most jurisdictions remains fixed at about 11.5 percent.⁸ With the proper regulatory incentives, a large share of those resources can be invested in communications infrastructure modernization in the United States.

In addition to the investment potential of the telephone companies, we should not ignore the fact that because of their history of universal, two-way voice service, they are uniquely suited to upgrade, deploy, and manage, the broadband network of the future. Replicating the assets that the public switched telephone system brings to this undertaking would be a costly and unwise mistake.

Another very compelling reason during this period of high unemployment for moving forward with a national strategy to build a broadband communications network is that it means jobs for Americans. While modernization of our communications infrastructure by itself will not pull the U.S. economy out of recession, it can provide a steady source of job creation into the future.

Investment by telephone companies in their telecommunications infrastructure will create jobs through the construction of the network and the economic efficiencies created by use of the network. A recent study by DRI/McGraw-Hill found that C&P Telephone Company's long-run modernization plans for investment of \$9.3 billion in Maryland's telecommunications network over the next 15 years will generate an additional 150,000 man-years of employment.⁹ A study of Pennsylvania's communications infrastructure found that telecommunications-intensive industries added more than 560,000 new jobs in Pennsylvania between 1985 and 1990. These same industries are projected to add over 1,600,000 new jobs between 1990 and 2000 in Pennsylvania.¹⁰

The United States cannot afford to ignore the job creating potential of building and using a national broadband communications network. Today, we are exporting jobs by maintaining an outdated regulatory climate that makes it more attractive for companies to invest abroad than here at home. As we do so, we are also forgoing the job creating potential of an efficient broadband communications network.

CONCLUSION: A CALL TO ACTION IS NEEDED

As we approach the 21st century, a broadband national communications network is a key part of a winning economic strategy for the United States. Failing to proceed to implement a plan to put in place a broadband national communications network is to handicap the next generation and force them to play catch-up ball with their international competitors. And as we have already learned the hard way in many of our industrial sectors, that is a most undesirable economic predicament.

Senator INOUE. Thank you very much, Mr. Prestowitz.

Unfortunately a prior commitment requires my absentsing myself, and so I will be calling upon Senator Burns to take over the chair. However, before leaving, I would like to assure all, and the witnesses to follow, that I too, like all of you, am convinced that this technology is the wave of the future. In fact, it is upon us right now. And this committee will not close its doors. It will maintain an open mind and it will continue to look into this matter with the hope that we can improve the technology infrastructure that can bring about the benefits that all of you have suggested would be forthcoming.

With that, my apologies to all of you. And now may I call upon Senator Burns.

Senator BURNS [presiding]. You will be missed, Mr. Chairman. Thank you very much.

We have Robert Harris, who is a professor and chair, Business and Public Policy, School of Business Administration, University of

⁸ Source: U.S. Telephone Association.

⁹ Telecommunications Network Modernization in the Maryland Economy, DRI/McGraw-Hill, Table 3.5, p. 21.

¹⁰ Electronic Highways: Prodding the Telecommunications Infrastructure for Pennsylvania's Economic Future, Price Waterhouse and National Economic Research Association, January 1992, p. 2-10.

California at Berkeley. And thank you, Mr. Harris, for coming today.

**STATEMENT OF ROBERT G. HARRIS, PROFESSOR AND CHAIR,
BUSINESS AND PUBLIC POLICY, SCHOOL OF BUSINESS AD-
MINISTRATION, UNIVERSITY OF CALIFORNIA AT BERKELEY,
BERKELEY, CA**

Mr. HARRIS. Thank you. I have prepared remarks which I would like to become a part of the record, and I have also submitted two articles, one describing the strategic character of telecommunications and a second reporting some of my recent study comparing R&D expenditures in the United States to that of other countries, which I will be citing and showing some of the highlights of biographical figures this afternoon.

Thank you for having me here. I think this legislation is critically important to the national interest and I strongly support it. There has been a lot in the press lately, especially surrounding the Japan trip of the President and the aftermath.

Americans have legitimate complaints about the failure of some of our trading partners to adhere to principles of fair trade, but let us not kid ourselves. We cannot achieve our national strategic objectives merely by demanding that other countries change their policies, however justified our demands may be. We have to change our own policies as well, and there is no better area than that in telecommunications.

Historically in this country the Members of the Senate, the Members of the House of Representatives, stood behind and were an important part of our national progress in building transportation, energy, and communications infrastructure. That is simply no longer the case.

Others have already testified, and eloquently, to the major benefits of telecommunications to the people who will be using it, whether it is the individual households or American businesses. I would like to concentrate my remarks on what I term the upstream effects of investing in the telecommunications infrastructure.

That is, what it does for the incentives for research and development, for innovation in telecommunications technology, and for the ability of American suppliers of telecommunications equipment and software to compete in what are today global markets.

Unfortunately, the signs, the numbers, from the past year point to a very dismal future. In the first two figures, I have shown the R&D expenditures as a percentage of revenues of some of the leading telecommunications companies in the world. There are telecommunications companies that are spending up to 17 percent and even above 20 percent of their total revenues. This does not depend on exchange rate conversions or on purchasing power parity discussions, this is equalized by stating it as a percentage of either their revenues or in my paper also as a percentage of income. The bottom line, the green line, the line that is indistinguishable from zero, is the Bell operating companies.

Now while the comparisons in the first figure are to telecommunications equipment companies—and note that I do include AT&T there. AT&T is the second from the bottom at roughly 6 to 7 percent. The companies up near the top are Japanese companies

and European companies. In the second figure I have compared the Bell operating companies to other public telephone operators in France, Britain, and Japan.

The United States, of course, in terms of population, is twice the size of Japan. It is roughly four times the size of Britain and France. And yet those countries are spending—their public telephone operators are spending more in absolute terms and large multiples in relative terms, of what we are spending in this country. Why should that be so? There is a very simple causal relationship that is revealed by these numbers.

The incentive to do research and development, the incentive to develop new products and services, depends on the ability to sell those services in the marketplace. When we restrict the ability of telephone companies to offer services, we reduce, if not eliminate, their incentives to develop the services in the first place.

Already, these numbers on R&D expenditures are beginning to reveal effects in terms of technology outputs, whereas figures 1 and 2 show inputs into the R&D and innovation process, figures 3 and 4 show some of the outputs of the technology or R&D process.

Figure 3 is based on data being collected by CHI Research. NSF is one of the major sponsors of CHI Research's data, which I consider to be far and away the most extensive collection and analysis of data on patent activity in the world. This shows the comparison of 13 sample companies, 3 of the leading U.S. companies, 4 of the leading Japanese companies, and 5 of the leading European companies over the past 6 years.

These are not actual patents. This is an index based upon the value of the patent and is measured primarily by how many times that patent is cited in other patents. So, it is a valuated index. The blue bars are the U.S. companies, the green bars are the European companies, the red bars are the Japanese companies, and all 13 of these companies are primarily telecommunications and information technology companies.

Figure 4 I have drawn from an independent study. This is a study undertaken recently by the Research Institute of the German Bundespost. It uses a somewhat different measure of relative technology performance. We hear repeatedly the statement that the United States is the technology leader. In some areas, that continues to be true. In other areas, it is a myth.

According to those numbers, Japan—the companies of Japan—have already surpassed U.S. companies in optical communications technologies, as measured by the accumulative value of patents received by companies of Japanese origin. Not only do Japan companies rank significantly above U.S. companies, even worse, as the graph shows, they are growing; their lead is actually growing over time.

What should we be doing about this? First, and most important, we must recognize that the United States has an industrial policy for telecommunications. Let us stop talking about whether we want to have industrial policy or not. We have one. The question is, what should it be? Should it be a policy directed at protecting the private preserves of separate communications media with different historical backgrounds and different technology in place? I believe not.

We should have learned the lesson from transportation, that transportation infrastructure investments would seldom make sense, except if they are allowed to be put to multiple use. We could not have justified the enormous expenditure of resources on railways, highways, or airways if we had said that they could carry only goods or only services.

What the combination of goods and services in the use of transportation infrastructure are the use of telecommunications infrastructure for voice, data and images. Without putting that investment to all of its possible uses, it cannot pay for itself. By allowing it to be put to all of those uses, it can more than pay for itself.

And that, frankly, is the bottom line. By saying we need to act affirmatively in telecommunications policy, by exerting leadership, vision, and initiative—as Senator Burns, in his proposed legislation would do—we are not talking about contributing to the fiscal crisis we are now in. For heaven's sakes, all of the things that are going to require public expenditures—and we are going to have to make tough choices—this is not one of them. This is what the economists declared do not exist, this is a kind of free lunch, sitting there, waiting for us to let it happen. If this legislation is passed and implemented, I believe it will.

Thank you, Senator.

[The prepared statement of Mr. Harris follows:]

PREPARED STATEMENT OF PROF. ROBERT G. HARRIS

A. INTRODUCTION

I am pleased to offer this statement in support of Senators Burns' and Gore's proposed legislation, "Communications Competitiveness and Infrastructure Modernization Act of 1991." Based on my recent studies of telecommunications developments in Europe and Pacific Rim countries, I believe that this legislation is vitally important to the U.S. national interest. It provides a workable framework for planning the development of the next generation communications infrastructure, without which we cannot regain the global economic leadership position we once held.

Americans have legitimate complaints about the failure of some of our trading partners to adhere to the principles of fair trade. But let us not kid ourselves. We cannot achieve our national strategic objectives merely by demanding that other countries change their policies, however justified our demands may be. We must also take concerted action, through business-government, Federal-state cooperation, to seize the initiative and fully exploit the potential advantages of information and communications technologies to increase productivity, improve the quality of life and enhance our competitiveness in the global economy.

Most importantly, we must remove the myriad of regulations, restrictions and restraints that reduce economic incentives for R&D, investment in new technologies and offering new communications and information services. Passage and implementation of this legislation would be a big step in the right direction.

B. TELECOMMUNICATIONS AS A STRATEGIC INDUSTRY

With over 50 percent of American workers now involved in information-related employment, telecommunications has assumed strategic importance for the U.S. economy. In the accompanying paper, I have (1) explained the characteristics of a strategic industry; (2) shown that, in the "Information Age," telecommunications is one of the most strategic of all industries; and (3) examined the implications for U.S. public policies. In the remainder of my remarks today, I would like to summarize the paper and stress its relevance to the proposed legislation. There are four main reasons why telecommunications services is a strategic industry:

1. *Telecommunications is Strategic to Competitor Nations*

Telecommunications is a strategic industry first and foremost because our major international competitors have already made it so. In competitor nations, telecommunications is no longer a policy backwater of post, telegraph and telephone ad-

ministrations. It has become, instead, the cutting edge of national strategies for international economic advantage. Leading Pacific Rim and European nations have acted, in the past few years, to accelerate research and development, innovation, infrastructure investment and, the marketing of new communications and information services.

While there are important differences among national policies, they have one element in common: each of our top competitor nations have acted to remove regulations and restrictions that inhibit or prohibit telephone companies from offering new services. They recognize, as should we, that the revenues from new services provide both the incentive and the means to invest in research and development, innovation and infrastructure investment. Japan especially has designated telecommunications as a leading growth sector for the next century and has already made a national commitment to a broadband fiber optic network connecting every home and office by the year 2015.

This fundamental difference between the U.S. and its major economic competitors is, unfortunately, best seen in relative expenditures on R&D by major telecommunications companies. Figure 1 compares R&D expenditures, as a percent of revenues, of leading global telecommunications equipment manufacturers and the Bell Operating Companies. Figure 2 compares the aggregate R&D expenditures of the BOC's to three leading public telephone operators, British Telecom, France Telecom and Nippon Telephone & Telegraph of Japan. The origins of these figures are described in my recently completed study, "R&D Expenditures by the Bell Operating Companies: A Comparative Assessment," which I have provided to the Committee. Note that these comparisons do not include substantial government expenditures on telecommunications R&D in Europe and Japan. Inclusion of those figures would only worsen the comparison.

These figures show that the Bell Operating Companies, independently and through Bell Communications Research, are spending a markedly smaller share of their revenues on R&D. So long as they are restrained from offering the full range of potential services over the public switched network, they have little economic incentive to invest in discovering or developing the technologies of the future.

Not surprisingly, these differentials in R&D expenditures are already reflected in the technological performance of U.S. companies. Figure 3 is derived from a recent study by CHI Research, as will be reported in my forthcoming paper, "Strategic Uses of Regulation: The Case of Line-of-Business Restrictions in the U.S. Communications Industry," copies of which will be provided to the Committee upon completion next month.

Figure 3 compares the patents awarded to 13 major telecommunications companies: AT&T, GTE and Rockwell (U.S.); Fujitsu, Hitachi, NEC and OXI (Japan); and Alcatel, GEC/Plessey, Ericsson, Phillips and Siemens (Europe). According to the CHI Research data, the European and Japanese companies in this sample are patenting at far faster rates than the U.S. firms.

An independent study by the research institute of the German PTT (the Deutschen Bundespost) found that, in the area of optical fiber communications, the technological performance of Japanese companies has surpassed that of U.S. companies. Figure 4, which is taken from that study, showing Japan leading the U.S. and the margin growing over time. The trends in these figures point to the future, unless we muster the national will to change public policies and create positive incentives for American telecommunications companies.

2. Telecommunications is Essential for Competing in Other Global Industries

Telecommunications services have strategic "downstream" benefits, as more and more industries depend on enhanced information and communications services to reduce production costs, improve service quality, and extend the geographic reach of services. Other nations have elevated telecommunications to strategic importance because they recognize that state-of-the-art communications and information services are crucially important to both international competition in global markets (e.g., manufacturing, financial services, publishing, entertainment and natural resources) and increased productivity in domestic industries (e.g., health, education, public services). Today, and even more so in the future, a nation's ability to compete in world markets will depend upon information; hence the heightened importance of removing barriers to, and providing incentives for, innovation and investment in the telecommunications infrastructure.

3. Telecommunications Services Generate Social, as well as Private Benefits

Telecommunications is also strategic because "non-users" benefit as well; in economic terms, telecommunications generates enormous "positive externalities" and reduces "negative externalities." Continuing innovation and growth of telecommuni-

cations stimulates economic development by increasing the quality and quantity, while decreasing the costs of information. These positive spillovers benefit users, because the value of the network increases with the number of users interconnected by it.

Moreover, consider the number of communications users who do not buy a communications service, but benefit nonetheless: the millions of 800 callers who gain access to reservations systems, consumer information services and the like. Every time a consumer uses a credit card, the speed at which a retailer can verify payment makes the consumer better off. Even non-users benefit from improved communications, through the spillover effects on local regional and national economic development. Moreover, by reducing the need for transportation, telecommunications can reduce congestion on urban highways and airports, lower energy consumption and its concomitant pollution.

The recent report of the National Telecommunications and Information Administration, "Telecommunications in the Age of Information Age" provides an in-depth examination of the benefits of a modern telecommunications infrastructure. The NTIA should be commended for its leadership and foresight in identifying the crucial role of telecommunications in national economic performance. I strongly support the state and Federal policy initiatives advocated in that report. In combination with the vision and planning process proposed in S. 1200, those policy changes will go a long way to removing the current regulatory barriers to communications innovation, investment and development.

4. Telecommunications Investment Stimulates R&D and Innovation

Finally, telecommunications services are strategic because of the "upstream" benefits from innovation and investment by the suppliers of equipment, components, software and related services. Japan and Europe have realized that telecommunications infrastructure investment provides a domestic "platform" for stimulating the growth and development of supplier industries. By committing to a rapid deployment of optical fiber at home, for example, Japanese policy makers are ensuring that Japanese companies will gain a competitive advantage abroad, as later adopters of optical technology play "catch up." As we have seen from consumer electronics, a national strategic advantage, once lost, is difficult or impossible to regain. The recognition of these upstream benefits is the driving force underlying the differences in R&D expenditures and technological performance displayed in Figures 1-4.

C. DESTINATION 2015

Because telecommunications is a strategic industry, both for the U.S. and for our competitor nations, what are the implications for this legislative proposal for a national commitment to a broadband communications network by the year 2015?

1. Regaining Technological Leadership

First, we should understand that we are in a race with other nations. There is no question that, sooner or later, there will be a broadband communications network in the United States. The only real questions are when, and who will be served? Without a concerted national effort, it is highly improbable that we can win the race or even finish "in the medals." Indeed, the current public policy obstacles to network modernization make it certain we will lose it.

The stakes are extraordinarily high in this race. To the victor will go enormous spoils—technological leadership in optics and optoelectronics, a huge edge in manufacturing know-how and a perhaps insurmountable first-mover advantage: as other countries invest in fiber optic networks the leading nation's suppliers will have a substantial competitive advantage in supplying telecommunications equipment and services to those countries. This legislation provides the impetus needed to accelerate our efforts, giving the U.S. a reasonable chance at gaining international technological leadership in this arena. It will also ensure that American companies and workers will have the best available communications technology for competing globally in the information age.

2. Establishing a Cooperative Public-Private Planning Process

A national broadband fiber optic network represents a fundamental challenge to the U.S. As a nation, we have never relied solely on private enterprise to plan and construct major infrastructure investments. All of our major infrastructure systems—transportation, energy distribution, communications and financial services—involved some combination of government planning, financing, subsidies and/or regulation. Because these systems produce "public goods" and "positive externalities," market forces alone cannot generate the necessary momentum needed to develop a

comprehensive, affordable, universally accessible communications network for the 21st Century.

Most, if not all, of the investment in a broadband communications network can and should come from the private sector. Still, if broadband network investment is left solely to "market forces," many Americans will be left out of the information age, including lower income families, small business and rural areas. Senator Burns' proposed legislation ensures that the benefits of broadband communications and information services will be enjoyed by all Americans.

Given the Federalist tradition of the United States, it imperative that the planning process incorporate close cooperation among the states and the relevant private parties. At the same time, it must be remembered that a broadband communications network must serve national, as well as local interests. As in the planning for the Interstate Highway System, therefore, it will be necessary to establish planning guidelines, standards and criteria to assist the states and local governments and ensure that the parts of the system will combine to form a truly integrated, interconnected interoperable national network.

3. Involvement of Private Enterprises and Consumer Interests

The development and deployment of a broadband communications network will revolutionize every single communications and information service, thereby affecting every provider and every user of communication. To ensure that all voices be heard, the planning process should be open to all interested parties, including consumer and labor representatives, as well as the providers of communications services, manufacturers of communications and information processing equipment and the users of communications and information services. Some of the central questions involved in building a fiber optic network for the United States will be highly contentious—who will own the network? who will pay for the network?

There is no doubt that "special interests" will have their say in this process, as well they should in a democratic society. At the same time, we must keep foremost in our minds the national interest in a communications infrastructure for the Information Age. Policy makers can, by their leadership and their example, convey this clear message to those who, by their words and actions clearly put their private interests above the public interest. We should be especially suspicious of the "private use of the public interest": those who claim to be defending the customers of a competitor industry.

4. Removing Restraints on the Use of Communications Technologies

Historically, communications media—newspapers, magazines, records and tapes, radio and television broadcasting, cable television, telegraph, telephone, paging, mobile telephone and satellites—served specialized functions and were largely non-competitive. Through rapid technological advances, the functionality and technical capabilities of each of these media has increased dramatically. Extraordinary increases in demand for communications services has intensified users' efforts to find new ways to meet those needs. Consequently, there is much greater competition among communications technologies; increasingly it is public policies that restrain competition and prevent users from realizing the full potential that communications and information technologies could deliver to American homes, offices, farms and factories.

It is imperative, therefore, that we eliminate public policies which restrict or inhibit the use of communications media. Because no one can possibly know which technology is the best way to serve particular needs, we should enable and encourage competition among communications media to allow consumer choices and entrepreneurial initiative to determine which is best.

5. Freedom of Choice, Speech and Political Participation

The development and deployment of a national broadband network will generate a quantum increase in Americans' freedom of choice, freedom of speech and freedom of participation in civic affairs. Those who oppose a fiber network—because they fear the competition it will bring to the communications marketplace—claim that it will constrain choice, that it will limit freedom of speech and access to information. In fact, this legislation ensures exactly the opposite effect.

A broadband, interconnected, interoperable network would enable citizens to see, hear and participate in every possible type of political discourse, policy debate and public decision making process—at local, state, regional, national and international levels. Opportunities for citizens to interact with their representatives would increase tremendously; Americans could truly become citizens of the global political village.

In the economy, a broadband network would greatly expand consumers' choices of goods and services and provide timely and reliable information upon which to

make those choices. Americans in rural areas would have access to the same range of choices in goods and services as urban Americans.

Perhaps most importantly, Americans will have access to virtually every source of information—every library, every classroom, every newspaper, every entertainment or educational program that is connected to and by the broadband network. Students in Montana can “attend” lectures in Berkeley or Cambridge by dialing a number or turning a dial. Researchers can use the Library of Congress—or any other library of their choice. Individuals can read the newspaper of their choice—wherever it is published. School children can explore the Kennedy Space Center or the Smithsonian Museum as easily as turning the channel.

This legislation ensures that Americans will have the ultimate freedom of choice and right of access: any of these sources of ideas and information—and many more like them—will be available to every American. Whoever owns and operates the various interconnected parts of the broadband communications network could no more inhibit that access than the phone company can stop us from calling whomever we choose. This is the profound implication of video dial-tone.

D. CONCLUSION

One of the key reasons for our economic success in the post-war period was a telecommunications network far superior to other nations. It is critical that we regain that source of competitive advantage. Though many obstacles lie ahead and there are many difficult questions to answer, we must pull together and regain the national commitment to economic growth, technological advance, improved standard of living and quality of life.

The best communications system in the world will not solve all of our nation's problems, but amazingly, it can make a significant contribution to solving many of them. Modern communications can improve the quality and reduce the cost of educational and medical care. Broadband communications can increase the productivity of American workers in manufacturing, agriculture, natural resources and financial services. Enhanced communications can accelerate the exchange of ideas among researchers and accelerate the conversion of ideas into goods and services.

Perhaps most importantly, in an era of excruciating fiscal constraints at the Federal, state and local levels, building that modern communications network will not require substantial public expenditures. Through vision, leadership, initiative, and removing obstacles to private action, we can build a communications network for the next century, and for future generations of Americans, that will literally pay for itself.

Thank you.

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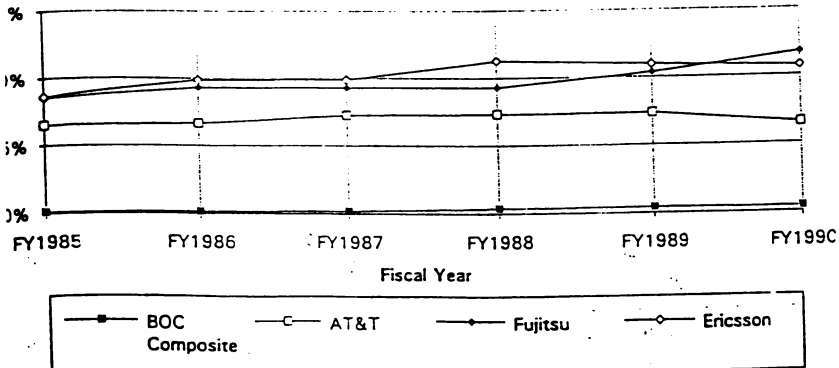
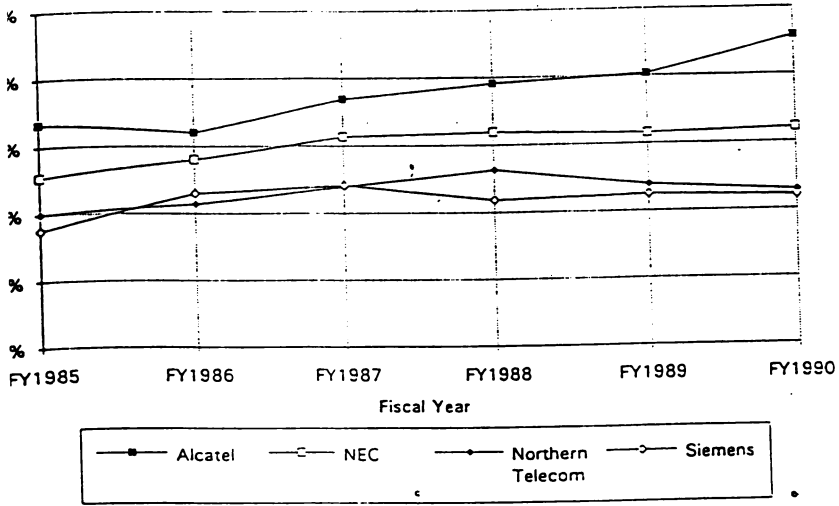


FIGURE 1.—Research and Development Expenditures as a Percent of Revenue: Comparison of BOC's and Equipment Vendors.

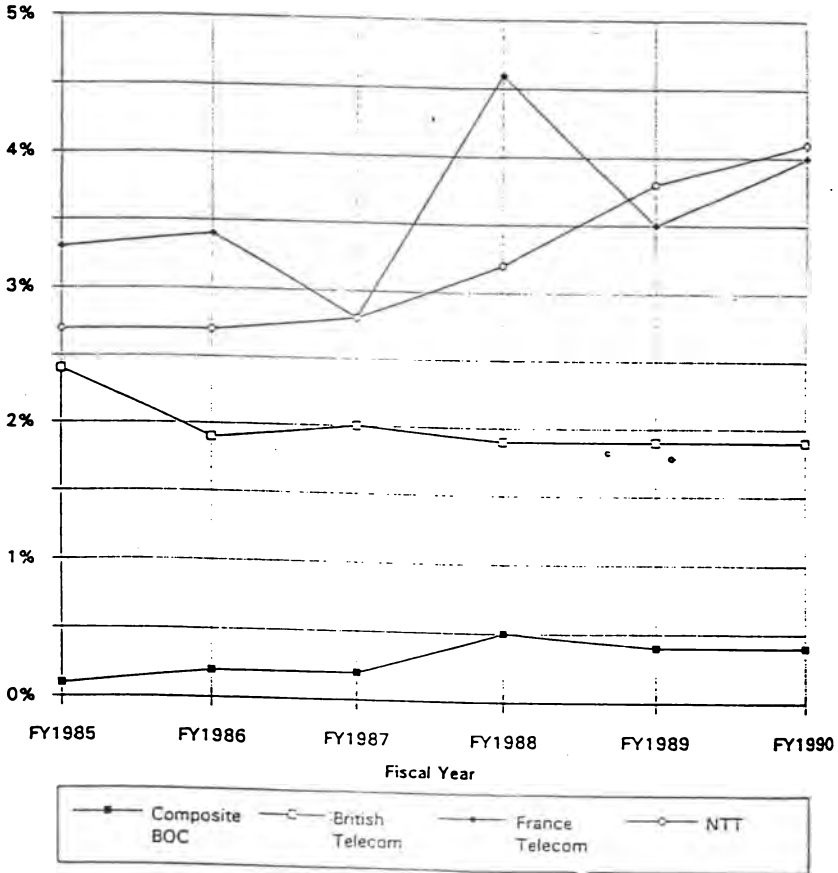


FIGURE 2.—Research and Development Expenditures as a Percent of Revenue: Comparison of BOC's and PTO's.

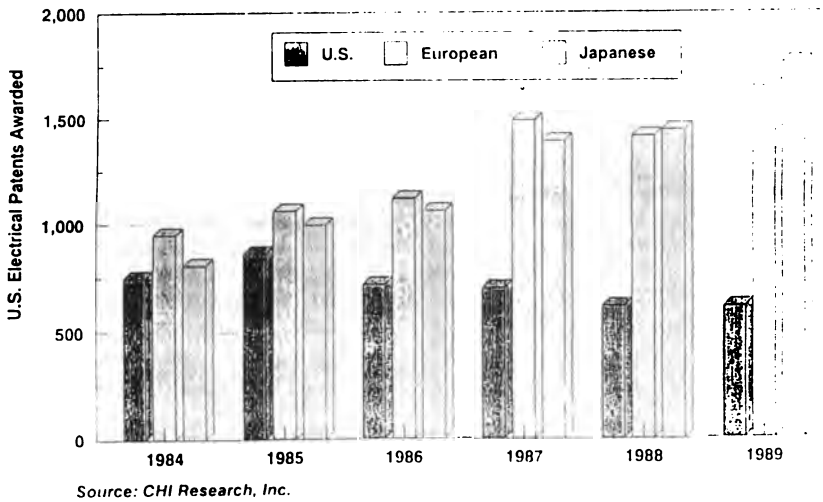


FIGURE 3.—Patent activity shows leading U.S. telecom manufacturers lagging behind Japanese and European competitors.

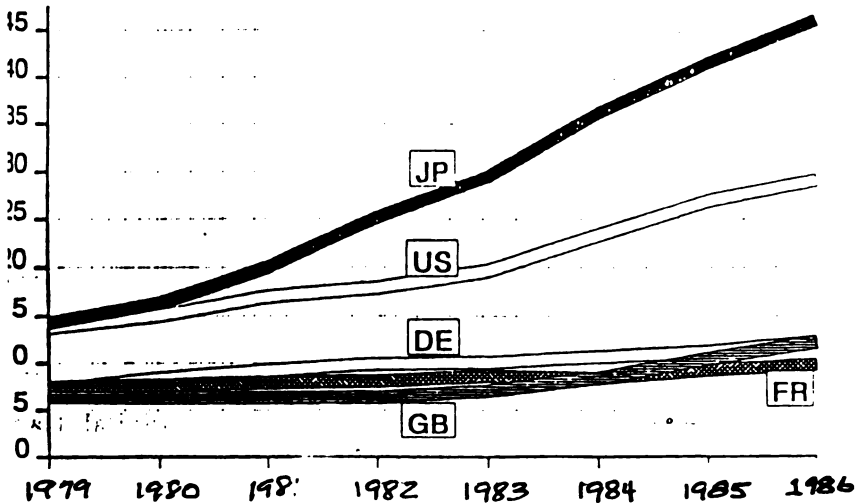


FIGURE 4.—Technological potential 1979-1986—Optical (Fibre) Communication.

Senator BURNS. Thank you, Mr. Harris. We appreciate those words.

It has been suggested, as you said awhile ago in your statement, that S. 1200, some of our critics would say, calls for industrial policy—the policy of picking winners and losers. I would like to have a response from each of you on that, and I would ask Mr. Prestowitz if he could comment on that first, in light of the statements from Mr. Harris.

Mr. PRESTOWITZ. Well, just to repeat what I said earlier, I agree with Chairman Sikes. The Government is involved. We have var-

ious agencies that are making choices. Those agencies are not going to be done away with.

At the moment, the cumulative sum of the choices being made is an industrial policy. It is an industrial policy not to go ahead with deployment of technologies. And I think that is imperative that we apply different criteria to the formation of that policy.

I agree that, to the extent possible, it is desirable to foster competition. I agree that demand-driven choices are desirable, and to the extent that that is possible, they should be encouraged. And I think a lot of that is encompassed in the bill under discussion.

Senator BURNS. Anyone else want to comment on that?

Mr. DERTOUZOS. Well, I do not think we should get hung up on electricity-laden words like industrial policy. In my view, Senator, the industrial policy of this Nation is handled 98 percent by the companies and their CEO's, and about 2 percent by Government. And on the part the Government contributes, I think we ought to take care of the common good—something that will not spontaneously rise. This kind of an infrastructure cannot rise spontaneously. Even within AT&T they have been fighting about how to do it—within one company.

So, I think it is important for the Government to move and act as the stimulus, as the seed. And never mind what it is called.

Senator BURNS. Mr. Harris, the charts that you just used—in your second chart, Investment in Telcom, Telecommunications R&D, are some of our R&D dollars going offshore? They are not staying here? Are they capitalizing on, maybe, R&D that is being performed in these other countries? Is there an interchange of information? That sort of concerns me.

When we do not have an incentive, and I would have to say that our tax policy has not been very favorable toward the investment in R&D, I would wonder if some of that is not going offshore.

Mr. HARRIS. Some of it is going offshore, but some of it is going onshore as well. The United States is still the biggest single telecommunications market—at least until 1992, when Europe opens up and is then a single market—in the world. And so, those companies that are spending a lot of money on R&D are spending some significant parts of it in the United States.

Siemens has a major research lab here. NEC has a major research lab in the United States. NTT is a Canadian-based company with major facilities at Raleigh, NC, and a new lab opening up in Richardson, TX. So, that is not really the concern.

The concern gets to the stake that the telephone services providers have and the rate at which we are investing in our network. Japan is building a modern broadband network much, much faster than the United States is. They will buy a very large share of that equipment and software from Japanese suppliers. They do not have to have closed markets in order to do that. They have long-term market relationships.

Those revenues provide the continuing wherewithal to keep conducting the R&D. If we do not do that, if we do not keep up, we are going to be depriving American-based companies of that wherewithal, and they are going to continue to lose this technology race.

Senator BURNS. Could each of you describe in some detail the types of service you envision a broadband interactive network pro-

viding, and in particular the educational and health care services provided? Have you all ever thought about that?

Mr. GILLET. Absolutely. I would like to comment, also, on your industrial policy question at the end of that, if you do not mind.

I have had a chance, as I think you are aware, to play with a lot of these options over the years, in both Cerritos and what I was doing at Cablelabs to try and find what is it that is going to invent a demand for all of these concepts that we have been talking about.

And I have come to the conclusion that there really is one thing that is facing us today, that if we solve that problem, in fact, we will put in place whatever else all these other opportunities may or may not be, and that is distance learning.

We can put in place, in fact, interactive capabilities to allow people to learn where they study, work, or live, and after solving that problem and doing it—and it is such a short-term, critical need—that type of functionality can serve, I think, any other type of service we could imagine. So, while we talk about thousands of different options that are out there, perhaps we should focus on just that one, and allow people to become much more skilled at the things they are going to need to be able to be competitive into this next decade and into the next millennium. And when we take care of that one, maybe we will be in a position to do a lot more things as well.

Senator BURNS. Mr. Sonnenstrahl, do you see a connection in this type of legislation with the legislation that we just passed with the Americans for Disabilities Act?

Mr. SONNENSTRAHL. Yes, sir, I do, definitely. ADA really means access to everything, and that restrictions that previously had been on things will no longer be tolerated. And when ADA is completely implemented, then hopefully all of those restrictions will be lifted.

But this bill seems to be one that would enhance. For example, ADA emphasizes advanced technology, and in terms of telecommunications services. But we call that, in a way, a band-aid. So, in other words, when I was talking about the relay services, when a deaf person has to use those, then our privacy is invaded because we are dealing with a third person.

Now, if we had the provisions in S. 1200, we could communicate directly with the other person and not have a third party involved and not have our privacy invaded. Intelligence, fiber optics, broadbanding, telephone networking, would provide voice video data to be exchanged directly between the two users. So, in the future, that will include two-way video.

For example, if a deaf person is using sign language to communicate with another person, that could be done without going through a relay operator. Also, studies show the cost to start a national relay service will be approximately \$250 million a year. With the S. 1200 bill, if that is passed, it could pay for itself in a very short time.

For example, here, we have a shortage of sign language interpreters. We tried to get two interpreters today, and unfortunately we just got one. This is a two-person job. But for one person to do this whole job is really tiring. We really should have two interpreters, but there is a shortage of qualified interpreters in this

town. You know, this interpreter has been working all morning. [Laughter.]

So, if this were to pass, we could use television through the phone system, and use an interpreter in another part of the country. I could watch the interpreter here, and then, you know, the other interpreter could have a break. So, there are really monumental benefits to this.

Senator BURNS. I thought maybe this was a lobby to start on overtime for interpreters. [Laughter.]

Mr. Sonnenstrahl, thank you very much. We are going to leave this record open. And you will have some questions directed to you, and I would imagine some folks will want to talk to you, because the full committee will have some questions.

And I appreciate all of you coming today and offering your testimony. And I appreciate your interest in this subject. I feel it is very important. Thank you very much.

We will move to the third panel. On the third panel is Hon. Dennis Nagel, Chair, Subcommittee on Committee on Communications with the National Association of Regulatory Utility Commissioners. He is Commissioner of Iowa Utilities Board out of Des Moines, IA. William Squadron, who is Commissioner, Department of Telecommunications, from New York. Irwin Popowsky, who is from the Office of Consumer Advocate and the State of Pennsylvania. Phil Verveer, who is counsel to the National Cable Television Association, and Mr. Shooshan III, vice president, National Economic Research Associates, from here in Washington.

Gentlemen, we appreciate you coming today and offering testimony on this piece of legislation. We will make your full statements as part of the record. And I would first call on, as listed, Mr. Nagel from Des Moines, IA.

STATEMENT OF HON. DENNIS J. NAGEL, CHAIR, SUBCOMMITTEE ON COMMUNICATIONS, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS, AND COMMISSIONER, IOWA UTILITIES BOARD, DES MOINES, IA

Mr. NAGEL. Thank you, Senator Burns. As you have indicated, I do serve as chairperson of the Iowa Utilities Board, and also as chairman of the NARUC Communications Committee, on whose behalf I appear today.

The NARUC shares many of the concerns and purposes addressed in this bill. For State regulators, the creation of a modern, efficient, and affordable communications system is a high priority. The States are already developing a strong record in this area. A number of States are actively engaged in promoting more rapid innovation and investment, and encouraging the introduction of new services. In fact, my prepared remarks detail those efforts, such as explained by Senator Dole earlier.

NARUC neither endorses nor opposes this bill. There is no consensus among the State regulators on whether the aggressive deployment of a broadband network is in the Nation's best interest. Some of us are enthusiastic supporters of the concept; others of us have serious reservations. As a result, we did not attempt to take an overall position. But we do have a position on some particulars of this bill.

But before I go on, Senator, I guess I would like to compliment you and your staff for the efforts you have made today to listen to those concerns, because you have reached out to us, and we are greatly appreciative of that effort. Specifically, our concerns reach to some of the uncertainties we see in this bill. As you mentioned earlier, the bill requires local exchange companies to file their plans for developing a nationwide broadband infrastructure with the appropriate State public utility commission. These procedures, however, raise several uncertainties.

It is unclear to us what would happen if a State disapproves a local exchange company's plan to deploy the broadband infrastructure. Would the company be required to submit a new plan to State public utility commission, or could the company appeal the negative decision directly to the FCC?

It is also unclear to us whether the FCC can preempt a State public utility commission or make a de novo decision on whether the placement of the broadband infrastructure is in the public interest.

The NARUC also recommends that the provision in title I for the joint board be modified to provide that its decisions shall be administratively final and binding on the FCC. By its nature, the joint board requires participating FCC and State regulators to work together to seek compromise positions reflecting their mutual interests.

If the United States is to embark on this landmark expansive project, it is imperative that a structure be created to manage the inherent tensions between the Federal and State jurisdictions. An administratively final joint board is the best answer to those needs.

And rather than dwell on the remaining concerns that my association has, let me just say that I have heard a general theme this morning, Senator, which concerns me. And this is the questions that gave gone to the appropriate safeguards have presumed that the answer lies with safeguards at the national level—through the FCC or some alternative means.

In fact, if a broadband infrastructure system is developed in this country to serve every community, as I think you and I strongly agree that it should—not just the cities—then, we have to realize that that system will be primarily used, as the current system is currently used, to provide intrastate services, not interstate services. Whether it be local learning, local medical care, local government services—it will not extend beyond the State border.

Under the Communications Act of 1934, regulation of those activities are reserved to the States. And this bill, we hope, would include in it recognition of the prominent role State public utility commissions will have to play to make sure that the public interests are adequately protected—for both competitors and the consuming public.

In summary, we encourage the committee to address the uncertainties contained in the bill, along the lines we recommend. As State regulators, we are the public officials who ultimately must set rates and confront the public directly on the firing line. Ultimately, we will have to bear the consequences of this legislation. We would ask that the Congress help us meet those responsibilities.

Thank you.

[The prepared statement of Mr. Nagel follows:]

PREPARED STATEMENT OF DENNIS J. NAGEL

My name is Dennis Nagel and I serve as the Chairperson of the Iowa Utilities Board. My agency is responsible for the regulation of the rates and services of Iowa's telephone, electric, gas and water utilities. I also serve as the Chairperson of the Committee on Communications of the National Association of Regulatory Utility Commissioners (NARUC), on whose behalf I appear today.

As you may know, the NARUC is a quasi-governmental, non-profit organization founded in 1889. Within our membership are the governmental agencies of the fifty states, the District of Columbia, Puerto Rico and the Virgin Islands which are engaged in the regulation of utilities and carriers. Our chief objective is to serve the consumer interest by seeking to improve the quality and effectiveness of government regulation in America. More specifically, the NARUC is composed of, inter alia state and territorial officials charged with the duty of regulating the telecommunications common carriers, and, in six states, cable television. As such, they have the obligation to assure the establishment of such services and facilities as may be required by the public convenience and necessity, and the furnishing of service at rates that are just and reasonable.

The NARUC shares many of the concerns and purposes addressed in this bill. We certainly agree that the United States must fully realize the potential of new communications technologies if we are to remain competitive with the rest of the world during the remainder of this decade and into the next century. Indeed, the states well realize the importance of these factors in their competition with each other and overseas. In short, for state regulators, the creation of a modern, efficient, and affordable communications system is a high priority.

The states are developing a strong record in this area. Universal service at affordable rates remains a key priority for us, but in addition, a number of states are already actively engaged in promoting more rapid innovation and investment encouraging the introduction of new services. Several examples of state activity include:

- The Tennessee Public Service Commission has already embarked on an ambitious program to bring "information age telecommunications technology to all Tennesseans by the year 2000." The program includes rapid deployment of fiber optics transmission cable, CLASS services, ISDN, and switched broadband capabilities.

- The New Jersey Board of Regulatory Utility Commissioners will soon be receiving from its LECs plans to proceed with a \$1 billion deployment of the new telecommunications technologies including fiber optic cables for all communities in that State by 2010.

- In my own state, the Iowa Department of Economic Development and the Iowa Utilities Board have just initiated a study to determine the optimal schedule for deployment of new telecommunications technology for economic development purposes, particularly in our rural communities. We will determine the future needs of Iowa's businesses and decide how a rapid modernization plan can best be molded to suit those needs. The Pennsylvania Public Utilities Commission is conducting a similar study.

- Iowa is also constructing a broadband interactive video network to connect all government agencies and education institutions. Beyond providing voice and data communications, the fiber optic network will permit our schools and universities to engage in distance learning and our governments to more effectively reach the citizens.

In addition to these state examples, Kansas, Colorado, New York, Missouri, and Michigan are moving in a variety of ways to upgrade their telecommunications facilities and ensure their competitiveness in the coming years.

The states have also been at the forefront of regulatory reform and experimentation in recent years. Indeed, some have moved far more quickly and boldly than the federal government. Vermont's, social contract approach, and Nebraska's deregulation are cases in point. New York is a leader in Open Network Architecture (ONA) arrangements, setting a standard for the nation and has even fostered the growth of competition in the local loop. In short, the states been prime forces in the development of a new telecommunications age.

A bedrock of concern at the NARUC has long been to ensure that the states continue to be able to meet their regulatory responsibilities efficiently and effectively, while cooperating when necessary with the appropriate federal agencies. The current jurisdictional boundaries have evolved over time, and although there remains a tension between the states and the federal jurisdiction, the NARUC has not yet

persuaded that major changes are needed. The NARUC recognizes that the authors of this bill have been sensitive to the states' responsibilities and concerns in this regard, while we are most appreciative of the assurances provided, we remain concerned that some of the procedures set forth in the bill remain unclear.

First procedure involves a Joint Board of state and federal regulators, to be established under section 410(a), to make recommendations and regulations on how to fulfill the bill's objectives within the first year after the bill is enacted. The second requires local exchange carriers (LEC) to file their plans for developing a nationwide broadband infrastructure with the state commission having jurisdiction over their activities within one year after the rules are promulgated by the Commission. The state commissions are then given the authority to either approve, disapprove, or modify the plans for the broadband infrastructure. The plan then is submitted to the FCC for its action. The statute also has a provision which allows the FCC to approve, disapprove, or take over jurisdiction of the plan if the state does not act. As it currently stands, the bill contains the following uncertainties concerning the NARUC:

It is unclear what would happen if a state disapproves a LEC plan to deploy broadband infrastructure by finding that the plan is not in the public interest.

Will the LEC be required to submit a new plan to the state PUC or could it appeal a negative decision directly to the Federal Communications Commission?

It is unclear whether the FCC can preempt a state PUC decision or make a decision on whether the placement of the broadband infrastructure is in the public interest.

There also appears to be a question as to whether a state PUC decision allowing deployment of new facilities will be subject to modification by the FCC.

Although there are many questions about the potentially preemptive aspects of the jurisdictional scheme set forth in this bill, nothing else in the first title appears inconsistent with the NARUC policy positions. The one consistent theme which runs through all NARUC resolutions has been to preserve state jurisdiction over interstate activities.

NARUC also recommends that the provision for the Joint Board be modified so that its decisions shall be administratively final and binding on the FCC. The Joint Board can be an efficient mechanism for bridging the gap between federal and state regulators. By its nature, the Joint Board requires the participating FCC and state regulators to work together to seek compromise positions reflecting their mutual interests. If the United States is to embark on this landmark, expansive program, it is imperative that a structure be created to manage the inherent tensions between the federal and state jurisdictions. An administratively final Joint Board would be the best answer to those needs.

Title II of the bill also raises questions. This section of the bill makes it Federal policy to remove impediments to the multiple use of telecommunications technology. Title II, in its legislative findings, establishes the point that the domestic deployment of emerging communications technologies is hampered by legislative, regulatory, and judicial restrictions (section 201(1)). The bill also makes legislative findings that the federal and state regulatory restrictions on the efficient deployment of technologies retards the development of new and underutilized technologies. In order to remove these impediments, the bill authorizes the FCC to initiate any actions that it believes are necessary to remove obstacles to efficient multiple use of communications technologies. It is unclear what is meant by this Section, but on the proposed legislative we believe it could be inferred that the FCC would be empowered to preempt those provisions of the Modified Final Judgment (MFJ) creating a line of business restrictions which would include enhanced services, services, and inter LATA services.

It could also be inferred that the FCC could preempt state PUC requirements and actions which it believes might impede the multiple use of communications technologies. The language which has been added to the end of this section appears to have been inserted to reassure the states. However, its terms are ambiguous and lead to uncertainty. It states that nothing in this section should be construed to change the balance between federal and state regulatory authorities with respect to multiple use of communications that are in effect on the date of the enactment of this section. This language appears to be inconsistent with Title II's other legislative findings and language contained elsewhere in this section of the bill. Therefore, the language is intended to prevent preemption of the states, that reassurance should be explicitly spelled out.

Additionally, if this section of the bill is interpreted in a manner that allows the FCC to preempt the states from imposing appropriate safeguards and requirements designed to avoid cross subsidy or avoid price discrimination in instances where

some of the line of business restrictions are relaxed for Bell operating companies, then this section of the bill is inconsistent with the previous NARUC resolutions which state that "the NARUC urges that if Congress amends the Communications Act of 1934 to remove restrictions on the Bell operating companies that such legislation should include language to leave to the states the jurisdiction to fashion safeguards to avoid price discrimination and cross subsidies."

Title III of the bill involves the removal of impediments in order to facilitate the convergence of telephone and video technologies. This section may also be inconsistent with NARUC policy objectives. On March 3, 1988, a resolution was adopted to the effect that if the FCC eliminates the ban on cross-ownership of cable television and telephone companies, the state commissions should be allowed to determine the extent to which cross-ownership is allowed in each state. It stated that any rule or legislation developed by the FCC or Congress should allow state regulators to regulate the cross-ownership, and determine how joint or common costs will be recovered. Because Title III of this bill immediately relaxes the cross-ownership rules so that a LEC may provide video transmission services and video gateways (video dial tone) so long as they do not own or control the video program, this section of the bill would conflict with the NARUC resolution which seeks to allow individual states to determine whether or not their LEC's should be allowed to participate in these video markets. In 1990, NARUC adopted a resolution dealing with cable telco cross-ownership. It urged Congress to modify the franchising requirement as it applies to the provision of video programming using telephone company facilities in order to encourage the availability of "video dial tone service." However, that resolution also specified that video dial tone service should be tariffed and regulated by the states. It was also resolved that states should be given the authority to adopt specific consumer safeguards, such as requiring video dial tone service be provided through separate subsidiaries, to specify the cost allocation procedures and to have access to the books and records of the video subsidiary. That resolution also made clear that telephone companies should not be permitted to provide video programming at this time. The bill on its face appears to be inconsistent with the NARUC video programming limitation and also may be inconsistent with some of the provisions of the resolution relating to the states authority to protect basic customers through cost allocation, separate subsidiary requirements, or access to subsidiary's books. It is unclear whether the section of the bill which authorizes the FCC to promulgate rules dealing with these same aspects of consumer protection will have a preemptive effect on those states that wish to take a different approach to preserve and protect basic services than that provided in the bill.

In summary, we encourage the Committee to address the uncertainties contained in the bills along the lines we recommend. As state regulators, we are the public officials who must set rates and confront the public directly on the firing line. Ultimately, we will have to bear the consequences of this legislation. Please help us meet these responsibilities.

ATTACHMENT A—RESOLUTION SUPPORTING STATE INVOLVEMENT IN THE IMPLEMENTATION OF A BROADBAND COMMUNICATIONS INFRASTRUCTURE

Whereas, S. 1200 and H.R. 2546 are being promoted to advance the national interest by encouraging the more rapid deployment of a nationwide, advanced, interactive, interoperable broadband communications infrastructure; and

Whereas, S. 1200 and H.R. 2546 require each local exchange carrier to prepare a plan for implementing a broadband communications system for each state in which it operates; and

Whereas, Enactment of policies designed to promote the efficient implementation of a broadband network will require considerable cooperation between state regulators and the Federal Communications Commission (FCC); and

Whereas, Some provisions of S. 1200 and H.R. 2546 are unclear concerning the precise roles to be played by state and federal regulators as well as the authority which is to be granted to the states; and

Whereas, The cost of deploying a nationwide broadband communications network should be allocated between the federal and state jurisdictions in an equitable and efficient manner; and

Whereas, The National Association of Regulatory Utility Commissioners (NARUC) is on record as supporting legislation that permits telephone companies to provide facilities for only video programming transport within their local exchange areas so long as such services are offered on a non-discriminatory basis as a common carrier, and state commissions are not preempted from regulating the intrastate provisioning of the services; and

Whereas, The determination of whether intrastate investment by local exchange carriers is necessary and prudent properly resides with state Commissions, who must ensure that subscribers of basic services do not unnecessarily underwrite the costs of non-basic facilities; now, therefore be it

Resolved, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), convened at its Summer Meeting in San Francisco, California, expresses its concern that certain provisions of S. 1200 and H.R. 2546 are unclear and may be inconsistent with the goals of encouraging prudent investment in the public switched network and the continued growth and development of a multi-provider telecommunications infrastructure, and articulate an unnecessarily compressed time frame for study and review by state regulatory commissions; and further be it

Resolved, That the NARUC Executive Committee opposes any provisions of S. 1200 and H.R. 2546 that would preempt state determination of the prudence or usefulness of investments made by local exchange carriers in facilities to be used in whole or in part for intrastate services; and further be it

Resolved, That the NARUC Executive Committee supports amending S. 1200 and H.R. 2546 to establish an administratively final Federal-State Joint Board which will develop rules and regulations governing broadband implementation plans; and further be it

Resolved, That S. 1200 and H.R. 2546 require revision to specify precisely the intended role of state Commissions and to clarify those provisions of the bill that appear to preempt unnecessarily state authority and to set a realistic timeframe for planning, review and implementation of the broadband plans.

ATTACHMENT B—RESOLUTION ON CABLE/TELCO CROSS-OWNERSHIP

Whereas, The Cable Communications Policy Act of 1984 (Cable Act) establishes restrictions concerning the ownership of cable television systems by telephone companies; and

Whereas, Telephone companies currently may provide carriage for video programming on a "carrier-user" basis, and may construct advanced facilities for providing broadband services to unaffiliated customers; and

Whereas, The Cable Act requires a provider of video programming, including a person who leases broadband capacity from a telephone company, to receive a franchise prior to offering service to the public, a requirement which may inhibit development of "video dial tone" offerings by telephone companies; and

Whereas, The National Telecommunications and Information Administration and the Federal Communications Commission have suggested that "video dial tone" may be a viable way to provide a competitive alternative to independent cable operators; and

Whereas, The Congress is currently considering legislative initiatives concerning the issue of cable/telco cross ownership; now, therefore, be it

Resolved, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), assembled at its 1990 Summer Committee Meeting in Los Angeles, California, urges Congress to modify the franchising requirement as it applies to the provision of video programming using telephone company facilities, in order to encourage the availability of "video dial tone" service; and be it further

Resolved, That "video dial tone" service should be tariffed and otherwise regulated by the State commissions. In regulating such services, States should have the authority to adopt consumer safeguards such as: requiring separate subsidiaries for offering "video dial tone" service; allocating the costs of "video dial tone" service; having access to the books and records of the subsidiary and any parent or holding company to the extent it transacts business with the subsidiary; and excluding any losses incurred by the subsidiary from rates paid by other ratepayers; and be it further

Resolved, That telephone companies should not be permitted to provide video programming, or to package video programming.

Senator BURNS. Thank you, Mr. Nagel.

Next we have William Squadron, Commissioner, Department of Telecommunications from New York.

STATEMENT OF WILLIAM F. SQUADRON, COMMISSIONER, DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY, CITY OF NEW YORK, NEW YORK, NY

Mr. SQUADRON. Thank you, Senator. Thank you very much for the opportunity to testify concerning S. 1200.

I am here on behalf of the National Association of Telecommunications Officers and Advisors, NATOA, which is affiliated with the National League of Cities. In my position as Commissioner of the City of New York's Department of Telecommunications and Energy, I administer the cable franchises for that city. And what I and my colleagues in thousands of communities throughout the country have heard from cable consumers over the past several years is that they need relief from rapidly increasing cable television rates, poor customer service, and the other monopoly practices of many cable operators.

But what we mostly hear from them is that they need an alternative. They need a choice in the marketplace. As a result, NATOA has aggressively acted to support efforts, both before Congress and at the FCC, to bring competition to the cable marketplace as the best means of assuring quality, affordable video programming service.

The telephone company represents one of the few viable potential competitors to cable operators. And as a result, we have supported efforts, including efforts by yourself—and we have worked closely with your staff. I very much appreciate the opportunity that we have had to work with you to try to bring competition to consumers.

The efforts to allow telephone companies to enter the cable market, however, must also include the safeguards that are in the bill, many of which we heard discussed earlier this morning, and in addition, protection that assures that local communities derive the benefits that they are entitled to from commercial use of public property.

In 1984, in the Cable Act, Congress determined that the best mechanism to ensure those commitments to the community was the franchising process. And what has resulted from that are all kinds of benefits to communities that are just now beginning to flourish. We heard about some of them earlier this morning. They include educational channels. They include municipal access channels. They include institutional networks that are connecting hospitals, criminal justice locations, and all other kinds of important local institutions throughout the country.

The best mechanism to assure that the communities receive those sorts of contributions is the franchise process. S. 1200 moves in the right direction by allowing consumers to benefit from competition and from technological innovation. The first stage of cable market entry proposed by S. 1200—video dial tone, the common carrier basis—does not require under the current bill, but really should require, the same franchising requirement that currently applies to cable companies. It is through this mechanism that communities will be able to derive the benefits that they need and that they are entitled to for the use of their property.

We believe, therefore, that the same requirement that currently applies to cable operators for video programming should apply in

the same way to telephone companies, even when they provide the service on a common carrier basis. And to explain, really, the basis for our position here, I think that the consumer viewpoint is the one that is most instructive.

From the consumer standpoint, the entry of the telephone company into the video programming marketplace provides them with an alternative. From the consumer's viewpoint, it represents a choice. And there is also no difference from the market standpoint. Under the legislation, we would have two providers of video programming in competition with each other, because the goal, of course, is to generate competition. But we would have them subject to different standards unless franchising applies to the video dial tone.

From the local government standpoint, the absence of a franchise would not permit us to represent our constituents and the consumers' services in the way that we really feel we need to do to protect their interests.

The second aspect of telephone company entry into the cable marketplace involves the partial ownership or limited ownership of programming. In that respect, S. 1200 properly recognizes that the telephone company subsidiary that would be involved in the provision of video services should be subject to the same franchising requirements as the cable operator, and we certainly agree with that provision in the bill.

The written statement that I have submitted, which I understand will be included in its entirety, addresses a number of other provisions of S. 1200, including the multiple franchising provision, the cross-subsidization, and so forth. And rather than go into them in detail now, I would leave that to the written statement.

I would like to conclude by applauding Senator Burns, Senator Gore, and Senator Dole, for introducing S. 1200, for sparking this kind of attention on this absolutely critical issue on the American agenda today, and we look forward to working with you and the subcommittee on issues to assure that consumers receive the benefits of the telecommunications revolution.

Thank you.

[The prepared statement of Mr. Squadron follows:]

PREPARED STATEMENT OF WILLIAM F. SQUADRON

Mr. Chairman, Members of the Subcommittee, on behalf of the National Association of Telecommunications Officers and Advisors ("NATOA"), I thank you for the opportunity to testify today concerning S. 1200, "The Communications Competitiveness and Infrastructure Modernization Act of 1991," introduced by Senators Burns, Gore and Dole. NATOA represents local franchising authorities in more than 4,000 jurisdictions, which collectively regulate cable television systems that serve an estimated 40 million cable subscribers. NATOA is affiliated with the National League of Cities, for which it serves as a technical advisor on cable television matters and other telecommunications matters.

In addition to discussing the provisions of S. 1200, I also will address related concerns shared by local governments and consumers about the monopoly conditions that pervade the U.S. cable television industry, and the public's right to reasonable benefits and protections from commercial users of its rights-of-way, such as cable operators.

I. DISCUSSION

A. Congress Should Enact Telco Entry Legislation that Promotes Competition in the Cable Industry and Ensures that the Public Receives the Dividends and Protections to Which They Are Entitled

NATOA has advocated cable legislation that would protect and serve the interests of consumers. From Mt. Prospect, Illinois and Gillette, Wyoming to Denver and Miami, consumers have told us loud and clear that they want protection from skyrocketing rate hikes, poor customer service, and the other monopoly practices of many cable operators. Before Congress and at the FCC, NATOA has consistently argued that meaningful competition would increase the chances that subscribers would receive quality, yet affordable, cable service. We believe the most significant way that meaningful competition to a cable system can occur is if there is at least one other multichannel video programming distributor that offers a full array of services and programs comparable to those that traditional cable operators provide.

At this time, telephone companies ("telcos") have the capability of being one of the few viable alternatives to traditional cable operators. In addition to promoting competition, however, a goal of telco—or any other competitive multichannel video programming technology—legislation also should be to ensure that the public receives the benefits and protections they expect from commercial users of public property. In order to ensure that the public receives such benefits and protections, it is critical that telco legislation recognize the legitimate and historical role of franchising authorities in the dual federal-local structure for the regulation of multichannel video programming service providers. In short, local governments serve as trustees for their communities to guarantee that their rights-of-way and other property are used properly and in the community's interest.

When it enacted the Cable Communications Policy Act of 1984 ("Cable Act"), Congress determined that local governments, by imposing franchise requirements, could best ensure that safeguards necessary to protect against consumer abuse are in place, and that the public receives the benefits to which they are entitled for the use of their property. Congress recognized that "city officials have the best understanding of local communications needs and can require cable operators to tailor the cable system to meet those needs." H.R. Rep. No. 934, 98th Cong., 2d Sess. 24 (1984). NATOA believes that any telco legislation enacted by Congress should continue to recognize the critical role of local governments in ensuring that "local communications needs" are met.

NATOA believes that the best way to ensure that telcos providing video programming services meet local communications needs is to subject them to the same franchising structure and regulations to which cable operators are subject—namely, the Cable Act. By subjecting telcos to the Cable Act, Congress would ensure, among other things, that telcos: (1) provide community programming and local information services, such as, but not limited to, public, educational and governmental access ("PEG") channels, facilities and equipment; (2) provide compensation for the occupancy of public rights-of-way; and (3) are subject to local customer service standards and other consumer protection measures.

For the reasons stated above, NATOA has advocated the provision of video programming services by telcos in order to promote competition and technological innovation, so long as appropriate regulatory conditions and safeguards are established and enforced to ensure that the public receives the benefits and protections that they have a right to expect from commercial users of public rights-of-way. (A copy of NATOA's telco and cable policy is located at Attachment A.) NATOA believes S. 1200 moves in the right direction toward making the benefits of increased competition and technological innovation, which telephone companies claim they can make, available to the public. Such competition and innovation must be done in a manner consistent with the public interest.

B. S. 1200 Is a Step in the Right Direction in Terms of Promoting Competition in the Cable Industry and Ensuring that the Public Receives the Public Dividends and Protections to Which They Are Entitled

NATOA believes that telco entry into the provision of video programming services should proceed cautiously, and in phases. S. 1200 in some ways adopts this approach; it provides for a phased entry of telcos into the cable market under a set of regulatory and structural safeguards. We also are pleased that S. 1200 directs the Federal Communications Commission ("FCC") to conduct a study of the effects of telco entry and assess whether it has fostered competition and consumer choice in the cable industry.

The first phase of cable market entry proposed by S. 1200 involves permitting telcos to transport video programming on a common carrier basis. So-called "video

dial tone" service could include, among other things, video gateways, billing and collection services and network management information. However, S. 1200 allows a telco providing a "video dial tone" service, and customer-programmers of such service that provide less than 10 channels of programming, to be unfranchised.

As indicated above, NATOA believes that telcos providing video programming services should be subject to appropriate franchising requirements under the Cable Act. Local governments have a responsibility toward the property that they manage on behalf of their communities. Only through the franchising process can a community be sure to receive appropriate benefits for the commercial use of its property. In its present form, S. 1200 would allow a telco providing "video dialtone" service to use the public property without any of the contributions to the community normally associated with broadband, multichannel video programming service.

Moreover, as a potential competitor of a franchised cable operator, it is only appropriate that "video dialtone" services be franchised. Among other things, local governments should be able to ensure through franchise requirements that a telco common carrier providing "video dialtone" service: (1) makes transmission facilities available to public, educational and governmental users; (2) provides service to subscribers throughout a franchise area on a nondiscriminatory basis; (3) complies with consumer protection requirements concerning such matters as service, installation and billing; and (4) constructs its facilities using public streets in a safe and reasonable manner.¹

We believe that if telephone companies use valuable public lands and rights-of-way to provide video programming services they should be treated just like cable operators that use public lands for these purposes. They should be franchised. As trustees of the public rights-of-way, local government officials must assure that the public is fairly compensated for the use of its property by private enterprise. Prohibiting local governments from protecting the public in this way would be tantamount to requiring governments to permit the exploitation of mineral or oil rights for free.

The second phase of telco entry contemplated by S. 1200 would allow telcos to become cable operators and to have a limited ownership interest in the programming they carry. While NATOA supports the concept of allowing telcos to enter the cable market, we believe that Congress should proceed cautiously and on a trial basis in permitting telcos to own and distribute programming. NATOA supports the safeguards included in S. 1200 to prevent cross-subsidization and anticompetitive behavior by telcos. However, such measures are as yet untried and should be regularly monitored as actual experience is gained with the provision of programming services by a telco in its service area.

NATOA is encouraged that S. 1200 recognizes that telcos providing video programming services should be treated like cable operators. The bill requires telcos in this phase of market entry to be franchised and to be subject to all other appropriate regulatory conditions. Under the proposed legislation, these would include, but not be limited to: (1) requirements for PEG facilities, (2) franchise fees, and (3) customer service standards. We believe it is essential that local governments be permitted to require franchises and impose franchise-related requirements. They are in the best position to understand and respond to the cable television needs and interests of consumers within their jurisdiction.

NATOA has urged that if telcos begin to provide cable television service, they should do so through a separate video programming subsidiary. Such structural separation facilitates the audit process and provides some assurance that cross-sub-

¹In this regard, NATOA particularly is concerned with a pending proceeding before the FCC that would allow telcos to provide video dialtone service without a franchise pursuant to the Cable Act. The FCC, in an interpretive ruling, already has concluded that a "video dialtone" service provider is not a "cable operator" required to have a franchise under Section 621(b) of the Cable Act. This ruling is being challenged in the U.S. Court of Appeals for the District of Columbia Circuit by NATOA, the City of New York, other local governments, and cable industry representatives.

NATOA believes that the FCC's interpretive ruling is contrary to the express language of the Cable Act and Congressional intent. We believe that Congress intended, when enacting the Cable Act, to subject all multichannel video programming distributors that use public rights-of-way to the Cable Act.

NATOA hopes that Congress, by passage of S. 1200 or some other legislation, will make a determination about video dialtone service providers, and not leave it to the FCC. Moreover, NATOA hopes that FCC consideration of this issue will not postpone action by Congress on telco legislation. Only Congress, not the FCC, has the authority to comprehensively consider the full spectrum of telco entry issues. The FCC, for example, does not have the power to consider whether telcos can be cable operators and provide affiliated programming, given the cable-telco cross-ownership restriction in Section 613(b)(1) of the Cable Act. We urge Congress to act swiftly on telco legislation in order to circumvent any misguided and incomplete actions by the FCC.

sidization is avoided. Telephone service customers should not be forced to finance a telco's entry into the cable business. NATOA is pleased that S. 1200 flatly prohibits cross-subsidization and provides other cost allocation rules to protect consumers.

S. 1200 sets out other safeguards to telco entry that NATOA supports. The bill limits a telco's programming ownership to 25 percent of its -channel capacity, and assures that the remaining 75 percent of capacity is provided on a common carrier basis with nondiscriminatory access for all third party programmers. Another safeguard ensures that telcos may not purchase or gain control of any existing cable system within its local telephone exchange service area. We believe this is a critical restriction if telco entry into the cable market is to achieve the desired goal of increasing competition. However, we do believe that in exceptional circumstances local governments should be allowed to approve the purchase of an existing cable system by a telco. Such circumstances may exist where, for example, a telco is the only entity capable of assuming the operation of a poorly performing or abandoned cable system.

S. 1200 requires telcos to submit implementation plans for state approval and FCC certification. We urge that, during this review process, S. 1200 require states and the FCC to adopt a formal process to obtain the views of local governments whose jurisdictions are affected by the plans. After the plans are approved and certified at the state and federal levels, the states and the FCC should continue to monitor whether the proposed regulatory safeguards are effective in preventing cross-subsidization and anticompetitive behavior by telcos. In addition, NATOA believes that local franchising authorities also should have an appropriate role in such monitoring activities.

The last provision of S. 1200 we will comment on is the multiple franchise provision. This provision prohibits a franchising authority from "unreasonably" refusing to award additional cable franchises. NATOA is not opposed to the concept embodied in this provision. In fact, we welcome competition in our franchise areas. Contrary to the assertions of some in the cable industry, most cities across the country are open to and, indeed, welcome proposals for the provision of competitive cable services. NATOA believes the lack of interest in competitive franchises, and the failure of many attempted overbuilds, results from a combination of factors, including the economic infeasibility of many overbuild situations and increasing horizontal concentration within the cable industry.

Local governments should not under any circumstances be forced to award a franchise to unqualified applicants for any reason. We suggest an important modification to the multiple franchise provision in S. 1200. The bill currently lists four factors under which a franchising authority's refusal to award a subsequent franchise would not be considered unreasonable. We believe it is important to add two additional factors which would allow a franchising authority to refuse to grant a franchise on the ground that: (1) the proposed franchisee will not provide service to all subscribers within a franchise area on a nondiscriminatory basis; or (2) an additional franchise would interfere with a current franchisee's ability to comply with its franchise or to adequately serve the cable community (e. g., to provide universal service or PEG facilities). Local governments must be able to ensure that all economic, social, and cultural segments of the community are afforded reasonable access to the services, information and benefits that cable offers.

II. CONCLUSION

NATOA believes that S. 1200 takes a positive step towards introducing competition into a monopoly cable industry, broadening the diversity and quality of programming available to consumers, and ensuring that the provision of video programming services by telcos is consistent with the public's right to a dividend from commercial users of public rights-of-way. NATOA applauds Senators Burns, Gore and Dole for their efforts to advance the country's communications infrastructure and promote competition in the cable industry. We look forward to working closely with the Subcommittee on these issues to make consumers the true beneficiaries of competitive multichannel video programming technologies.

ATTACHMENT A

NATO 1991-22 Advocacy Platform—Telecommunications and Cable Regulatory Policy

I. NATIONAL TELECOMMUNICATIONS POLICY

1.1 Telecommunications critical to local infrastructure.—Telecommunications systems, including cable communications, are the major vehicle for the rapid exchange and dissemination of information, and can help serve important local economic development, public information, and consumer protection goals, as well as facilitate local government service functions such as traffic management, transportation, energy and education. Communications systems are a vital part of the local infrastructure, like transportation, sewer, and water systems. For local communities, the existence of an affordable, locally responsive, modern communications infrastructure means efficient access to information, increased productivity, and new economic development opportunities.

1.2 Telecommunications component can be part of municipal solutions.—Solutions to many major municipal problems typically carry a telecommunications component. Thus, the need for high quality telecommunications by and among local governments and all segments of the community must be addressed and included in local planning. A local government role in all telecommunications markets should be preserved to ensure that local needs are met, and that equitable and consistent requirements for fees, facilities and standards are established in the public interest.

1.3 Local regulation should be preserved.—National communications policy should ensure the provision of communications services which meet local needs and interests, protect consumers, promote the public interest as competitive markets emerge, and provide state of the art universal communications services at affordable rates. To assure the attainment of these goals, state and local regulation of telecommunications services should be preserved to the maximum extent consistent with concurrent national policies and the prevailing competitive environment. Appropriate deregulation should be narrowly tailored to develop and extend competition in telecommunications markets. Monopolistic and anticompetitive pricing structures, service and marketing policies, and related practices should be eliminated or constrained through effective regulation.

II. REGULATION OF CABLE COMMUNICATIONS SERVICES

2.1 Rationale for local regulation of cable.—Municipal regulation of cable television is essential for several reasons: (a) to prevent cable's abuse of its natural monopoly position; (b) to regulate cable's use of valuable and limited public property, including rights-of-way and easements, and provide fair compensation to the public for such use; (c) to protect consumer interests; (d) to foster community local programming, including public, educational, and government (PEG) access to cable systems; (e) to serve the community's cable-related needs and interests; (f) to promote fair and reasonable competition to cable service where effective competition is possible; and, (g) to ensure that all individuals and groups in a community have fair access to the benefits of communications technology (voice, video and data) both before and after competition develops.

2.2 Cable Act of 1984.—The Cable Communications Policy Act of 1984 generally recognizes local governments as the franchisers and primary regulators of cable television. However, certain aspects of the Act and the manner in which it has been construed by both the courts and the FCC have adversely affected local and consumer interests. The Act has impeded the public interest in such areas as appropriate regulation of rates, the securing of adequate financial support for PEG access, the consideration of franchise renewals on fair terms, and assurance of adequate customer service and signal quality.

2.3 Constitutional Considerations and Local Cable Regulation.—The appropriate application of constitutional principles to cable television is presently unsettled. Cable operators for their own economic advantage are attempting to distort the First Amendment and challenge government cable regulation on constitutional grounds. The appropriate constitutional standards for this medium should be based on the following essential propositions:

- (a) local cable television distribution facilities are natural monopolies;
- (b) cable makes permanent and extensive use of public property, including rights-of-way and easements;
- (c) diverse sources of programming, including local community programming such as public, educational, and government access to cable television systems promote First Amendment and other constitutional interests;

(d) universal cable service extension requirements promote the First Amendment and other constitutional interests of the public;

(e) the First Amendment interests of the franchising authority and the public in assuring diversity and a vigorous marketplace of ideas outweigh the cable operators' interest in asserting editorial control and limiting access; and

(f) cable television is a unique medium of expression that requires its own First Amendment analysis, not applicable to print media or newspapers, which fairly recognizes all of the interests at stake in the community served; because cable television is a uniquely local system sharing many characteristics with the broadcast medium and telephone systems, cable television must be regulated in its own right, primarily by local governments through the franchise process.

2.4 Damages Immunity.—Some local governments are threatened with extraordinary monetary judgments in lawsuits by cable operators challenging the fundamental nature of local regulation and franchising otherwise authorized by the Cable Act or other applicable federal, state or local law or regulation. Franchise authorities need to be freed from these extortionate claims, which might otherwise be settled rather than litigated due to lack of adequate local government resources. It is therefore in the public interest for Congress to take the same approach already taken with the antitrust laws, and enact legislation that immunizes franchising authorities from the specter of money judgments in lawsuits that challenge local cable television regulation and franchising actions that are otherwise consistent with federal law. Such immunity should similarly be extended to franchising authority actions consistent with state or local law or regulation. This will protect franchising authorities from intimidating tactics by cable operators, and safeguard taxpayers from unnecessary legal defense expenses.

III. FEDERAL/LOCAL JURISDICTION OVER CABLE TELEVISION

3.1 Franchise authority responsibilities.—Franchising authorities should have primary responsibility for all local communications matters. This includes the establishment of requirements for: (a) franchise award modifications, transfers, renewal, revocation, enforcement and administration; (b) ownership structure (e.g. municipal or private) and extent of public participation; (c) design of cable system facilities, equipment, and other communications services; (d) promotion of minority and female business enterprises, equal employment opportunity, and affirmative action; (e) programming diversity in response to community needs and interests which is consistent with appropriate constitutional principles; (f) capital and operating support for PEG access organizations, facilities and equipment; (g) consumer protection and enforcement of meaningful customer service standards; (h) continuity of service in cases of abandonment or termination of franchises; (i) prior approval or disapproval of transfers; (j) the construction and operation of a cable system; (k) the use of municipally owned poles (and the fees for such use); (l) universal, non-discriminatory service availability to subscribers throughout the franchise area; (m) the inspection of books and accounts, the conduct of audits, the information necessary to monitor compliance; (n) determining the amount and use of franchise fees; and, (o) signal quality standards.

3.2 Federal jurisdiction.—Exclusive federal jurisdiction should be limited to those matters expressly and unambiguously granted by statute. Federal preemption and regulation by the FCC are appropriate only where there is unambiguous Congressional authority favoring preemption or regulation. All other matters should be left to local franchising authority control.

IV. RATE REGULATION

4.1 Impact of Cable Act as construed by FCC.—(a) The Cable Act authorizes the regulation of basic service rates in any community where the cable system found to be not subject to "effective competition" as determined by the FCC. On the basis of this provision, the FCC initially determined in 1985 that a cable system is subject to "effective competition" when three or more unduplicated broadcast television signals are "available" in the entire cable community. The initial FCC determination has since 1987 effectively prohibited the regulation of basic service rates in virtually every community in the nation.

(b) In 1991, the FCC announced a revision which would increase the number of broadcast signals regarded as "effective competition" from three or more signals to six or more signals, and would include a multichannel competitor provision that defines "effective competition" from such competitor as the availability of the competing service to 50 percent of the homes passed by the cable operator and actual service to 10 percent of such homes.

(c) The FCC's determination that broadcast signals provide effective competition to basic cable service was and is inappropriate and unwarranted. Any amount or combination of broadcast signals cannot substitute for the unique cluster of services cable television provides. An adequate consumer "choice" does not exist between a small number of broadcast signals and a high capacity multichannel cable service. In addition, the FCC rules only require the theoretical rather than actual availability of broadcast signals. This policy, both initially and in its 1991 version, leaves thousands of franchise areas and millions of homes with no access to a wide array of video programming other than through a rate-deregulated monopoly cable provider.

4.2 Regulation of cable rates and charges.—A cable franchising authority should be authorized to regulate the rates and charges for all cable television services (including charges for installation, equipment used to receive cable service, and other cable-related services), except for programming offered on a per channel or per program basis that is not significantly supported by revenues from advertisements, in areas not subject to "effective competition." The manner in which rates and charges are regulated⁷ should be left to local determination utilizing fair, objective, and openly stated standards; and an open process affording the public and the cable operator reasonable notice and an opportunity to be heard.

4.3 Definition of "effective competition."—A cable system should be considered subject to "effective competition" if: (a) in the cable community in which it provides service, less than 30 percent of the households to which cable service is available subscribe to such service; or, (b) the cable community in which it provides service is served by more than one multichannel video programming delivery system. A cable community shall be considered served by more than one multi-channel video programming delivery system if a comparable package of video programming (which includes, among other things, PEG access channels, local broadcast stations, and satellite services) is available to at least 80 percent of the households in the community. Moreover, the number of households subscribing to such competing multi-channel delivery system, or systems, must exceed 35 of the households in the cable community; provided, however, such percentage must be located in the portions of the cable community served by both the cable operator and the competing multichannel programming distributor.

4.4 Federal involvement in local rate regulators matters.—(a) In the event federal involvement in local rate regulation matters and standards continues or increases, the principle of local involvement should be preserved through a process similar to the current industry/franchising authority discussion of cable technical standards, or through a Joint Board on Rates, composed of representatives of the FCC (or its designee) and franchising authorities (e.g. NATOA, NLC, USCM, NACo), to act on petitions for exemptions and challenges related to rate regulation matters. The establishment of a Joint Board on Rates is not intended to circumvent the primacy of local determinations on rate regulatory matters.

(b) No federal standards or guidelines for local rate regulation should be authorized or promulgated without sufficient latitude to enable all local circumstances to be taken into account.

V. CHANNEL PLACEMENT, TIERING AND BROADCAST SIGNAL CARRIAGE

5.1 Channel assignments (i.e. dial location) and retiering.—Under federal rate deregulation, many cable operators have unilaterally altered programming and channel packages through "retiering" or repositioning of channels. Many of these realignments and retierings have been implemented for reasons unrelated to subscriber satisfaction or customer service (e.g. many cable operators are attempting to avoid rate regulation on their most popular basic tier by offering an unmarked "reduced basic" tier taken by only a fraction of subscribers). As a result of retiering and channel repositioning, consumers often encounter unnecessary difficulties in locating services, particularly community programming and access channels, on many systems. To provide better protection for consumers, cable franchising authorities should be authorized to regulate the placement (i.e. dial location and numbering) of all channels and packages or "tiers" of service, whether or not such channels or tiers are subject to rate regulation. No law should impede or erode the existing right of a franchising authority to require adequate prior notice both to itself and to all Subscribers of any proposed tiering or retiering, repositioning of services, alterations in channel assignments or dial locations, or changes in rates and charges.

5.2 Must-Carry Requirements.—(a) New federal must-carry rules (which do not allow for the use of channels set aside for public educational, or government access) should be enacted into law to replace the former FCC rules invalidated by the courts. Such rules, which should be sensitive to constitutional limitations, should re-

quire the cable carriage of local public broadcast stations and commercial stations within reasonable parameters designed to preserve diversity and avoid duplication of services in local communities. The purposes of revised rules should include: (1) protecting the public broadcasting system, which meets local needs for educational and other public services; and, (2) preserving the nation's system of free over-the-air broadcast service.

(b) Revised federal must-carry rules should not authorize cable operators to place commercial or noncommercial broadcast stations on "unused" channels set aside for public, educational or governmental access; any such authorization should at minimum provide for only limited, temporary use and prior approval of the franchising authority.

VI. PUBLIC, EDUCATIONAL, AND GOVERNMENTAL (PEG) ACCESS: LEASED ACCESS

6.1 PEG Access requirements serve the public interest.—The reservation to public and educational institutions, and to local governments of the right to utilize a portion of the cable operator's channel capacity to provide programming and community information outside the operator's editorial control is critical to the public interest in a free marketplace of ideas within a multichannel market, whether such market is dominated by a cable operator monopoly or otherwise.

6.2 Franchising authorities should have restored authority to support PEG access.—Federal law presently limits the ability of franchising authorities to require financial support from the cable operator for PEG access. Federal law should be changed to:

(a) authorize franchising authorities to require in a franchise both operating and capital support for access facilities, equipment, staffing, and maintenance without any limitations or credits against franchise fees;

(b) designate entities to provide access services; and

(c) provide liability protection wherever a franchising authority, access entity, or cable operator does not exercise editorial control of access.

6.3 Leased access to cable systems.—The goals of competition and diversity could also be served by the adequate development of leased access to cable systems, in keeping with the original goals of the Cable Communications Policy Act of 1984. Congress should require cable operators to make publicly available a tariff specifying reasonable rates, terms and conditions for leased access; and franchising authorities should be authorized to review and approve such rates, terms and conditions.

VII. CONSUMER PROTECTION AND CUSTOMER SERVICE

7.1 Need for Local customer service and consumer protection standards.—Local franchising authorities, which are closest to consumers, should continue to be allowed to fashion customer service standards that meet local needs and conditions. The FCC itself has concluded that the Cable Act should be clarified "to increase the effectiveness of the powers given to local franchising authorities to oversee the customer service practices of cable operators."

7.2 National customer service standards.—Recent Congressional legislative proposals and national cable industry policy raise the prospect of cable customer service standards established on a national basis. NATOA does not oppose national minimum standards, so long as local franchising authorities retain current authority to enact and enforce differing and/or more rigorous standards in local communities where circumstances warrant.

VIII. TECHNICAL STANDARDS AND ISSUES: SPECTRUM ALLOCATION

8.1 FCC preemption of technical standards.—(a) Signal quality is a matter of significant concern to subscribers; moreover, signal quality is a factor which franchising authorities are authorized to consider in determining whether a franchise should be renewed. Nevertheless, the FCC has severely restricted local regulation of signal quality. Cable franchising authorities should be authorized to establish and enforce technical standards governing signal quality, and FCC involvement should be limited to such matters as the establishment of minimum technical standards (which may be exceeded by technical standards established by franchising authorities) and the enforcement of technical standards at the request of a franchising authority.

(b) No federal technical standards for cable should be authorized or promulgated without sufficient latitude to enable all local circumstances to be taken into account.

8.2 FCC rulemaking to revise technical standards.—The FCC in 1991 has announced proposed revisions to its technical standards, the first major revisions more than a decade. In cooperation with the FCC, NATOA has taken an active role in discussing revised standards with the cable industry, and welcomes the FCC

long-overdue decision to update the standards. NATOA will carefully examine proposed FCC standards with a view toward sufficiency both in substance and scope, and with the goal of developing a positive and cooperative joint-enforcement relationship between franchising authorities and the FCC.

8.3 Equipment compatibility.—Equipment compatibility is an area where a greater federal role is warranted due to consumer confusion and difficulty in the current television and video equipment marketplace. Federal standards should be established to ensure that the services delivered by a cable system to subscribers are compatible with all operational functions of cable-ready television receivers and video cassette recorders. Such standards should promote the commercial availability of converters and remote controls compatible with converters. Television manufacturers should be required to include cable-ready and addressable technology compatible with cable systems and other multichannel video systems in television receivers and video cassette recorders shipped in interstate commerce or imported into the United States. Such standards should take into account technical and economic feasibility, and the cost and benefit to consumers. Such standards should be periodically updated to reflect changes in technology. National policy should in all cases be developed to encourage maximum consumer access to alternative video and telecommunications equipment.

8.4 Public safety issues in spectrum allocation.—(a) The Federal Government should preserve the allocation of sufficient radio spectrum to local governments for public safety use in order to enhance coordination of communications among public safety agencies and to ensure the ability of local governments to meet their responsibilities for fire, police and emergency services.

(b) No reallocation of telecommunications spectrum should occur without consultation with local government and consideration of public safety needs; nor should the federal government institute spectrum auctioning or user fees without providing an exemption for public safety services.

IX. FRANCHISE FEES

9.1 Nature of franchise fees.—Franchise fees payable by cable television operators and similarly-situated users of public property (including rights-of-way) are not tax, but represent fair compensation for long-term use of valuable rights, and their benefits. Franchising authorities have a fiduciary responsibility as trustees to the public for ensuring that the public earns a fair return in exchange for allowing private, for-profit use of such valuable, contiguous easements as a franchise provides. Franchise fees are in addition to the fees a franchising authority receives for cable operator's use of public improvements, such as utility poles. Franchise fees should be upheld by courts as valid regardless of whether similar fees are imposed on other users of public property or other media.

9.2 Cable Act limitation on Franchise Fees.—The Cable Act includes a nationwide limitation on franchise fees to five percent of the gross revenues derived from the operation of the cable system, with no provision allowing a franchising authority to recognize and negotiate for the fair market value of the right of way use and other benefits conferred. In light of the extraordinary nature of this restriction, other financial and in-kind payments, and all other municipal permits fees, costs, direct or incidental fees and taxes should be exempt from the five percent cap and the states should be barred from imposing restrictions on franchise fees. Any such payment, fee, or tax should be regarded as valid and exempt from these franchise fee limitations unless clearly and unambiguously defined as a franchise fee.

9.3 Itemization of Franchise Fees.—Because franchise fees represent payment for use of the public rights of way, such fees are an operating cost to cable operators similar to any other operating cost. Current federal law allowing cable operators to itemize franchise fees as a portion of subscriber bills is discriminatory to the extent it does not also mandate itemization of other cable operator expenses. Such itemization has led to a false impression on the part of many subscribers that such fees are a municipal tax, and have led to abuses by many cable operators who attempt to treat the fee as a "pass-through" and thus evade payment on 100 percent of their franchise area local gross revenues. Federal law authorizing such itemization is not in the public interest, and should be repealed or, in the alternative, should be amended to clarify that the fee is a charge upon the operator, and is not to be treated for billing purposes as an additional charge upon subscribers.

9.4 Costs of franchising, transfers, and renewals not to be created against franchise fees.—The Cable Act excludes from franchise fee limitations the costs of franchising, transfers, and renewals, but the intent of the Act should be clarified to avoid cable operator litigation and challenges to such costs. Specifically, federal language should clarify existing law that franchising authorities may pass along cer-

tain costs related to franchising, renewal, and transfer of ownership activities, and out-of-pocket costs, including consultant and legal costs. Such language should also clarify that such costs may not be taken as a credit against franchise fees.

X. RENEWAL OF CABLE FRANCHISES

10.1 *Cable Act Renewal Provisions are Not in the Public Interest.*—The Cable Act establishes complex and ambiguous renewal provisions which are anti-competitive, unfairly favor incumbent cable operators, set out cumbersome and expensive procedural burdens to be met by franchise authorities in order to reasonably deny renewal, and which are not consistent with normal franchising practices. These provisions are difficult for franchise authorities to implement in a manner that protects community needs and interests.

10.2 *Legislative recommendations on amendments to Cable Act renewal process.*—The Cable Act provisions regarding renewal should be deleted entirely, and cable franchise renewals should be handled in accordance with applicable local law as is the case with other utility franchises. At a minimum, federal law should be revised to:

- (a) allow franchise authorities to consider competitive renewal proposals along with the incumbent's proposal at the time of renewal and to grant franchises to such competitors if they are deemed to better serve community cable-related needs and interests, provided, however, that a franchising authority is not required to grant a competitive bid and that it retains the discretion to grant additional franchises at any time;
- (b) provide franchise authorities with broadened authority to review all elements of an operator's past performance (e.g. rate increase history) without regard to transfers during the franchise term; and
- (c) limit administrative and procedural complexities, and establish an "arbitrary or capricious" standard for judicial review of a franchising authority's renewal decision.

XI. TRANSFERS AND TRAFFICKING OF CABLE SYSTEMS

11.1 *Franchise Authority Disapproval of Transfers where Not in the Public Interest.*—In conjunction with the consolidation of the cable industry, cable systems until recently were being bought and sold at increasingly higher prices, sometimes without the prior approval of the franchising authority or without a commitment to comply with existing franchise obligations. Because this trend may re-emerge, federal law should not limit franchising authorities' existing right to disapprove a proposed transfer upon any reasonable ground in order to protect the public interest; including, but not limited to, a finding of past failure to comply with the franchise, a failure by the incumbent to hold the franchise for reasonable minimum period, a refusal by the transferee to agree to comply with the terms of the franchise in the future or to accept reasonable new terms imposed by reason of the transfer, or a finding of economic non-viability (as reflected in the purchase price or debt burden to be assumed by the buyer of a franchise).

11.2 *No limitation on Scope of Franchising Authority's Right of Review.*—No federal law should limit or impede the franchising authority's responsibility to fully review a proposed buyer's legal, technical, and financial qualifications, and no federal law should impose any artificial limit on the duration of such review, which is typically dependent on the timeliness and completeness of information about the proposed transaction to be submitted to the franchising authority by the buyer and seller.

11.3 *Federal anti-trafficking rules.*—Anti-trafficking rules similar to those that previously applied to radio and television broadcast licenses should be established by the federal government and should apply to cable system transfers and other effective changes in control. However, such rules should not apply if a franchising authority determines that a particular transfer would be in the public interest.

XII. PROBLEMS IN CABLE INDUSTRY OWNERSHIP, OPERATIONS AND PRACTICES

12.1 *Concentration of Ownership and Vertical Integration.*—As a result of the ongoing consolidation of the industry, cable system ownership has grown increasingly concentrated (i.e. the largest cable companies control an increasing share of the systems serving most of the nation's cable subscribers). Cable industry operations have also become vertically integrated (i.e. the programming carried on most cable systems is increasingly owned by the largest cable companies). The federal government restricts the crossownership of cable systems and certain media (primarily in local markets), but does not restrict concentration of ownership or vertical integration. To prevent the anticompetitive practices associated with concentration of ownership,

federal law should limit the crossownership of cable systems by other media interests. Furthermore, the percentage of households served by a cable company and its affiliates should be limited to no more than fifteen percent of the nation's cable subscribers. To eliminate the unfair competitive advantages associated with vertical integration, volume discounts and other discriminatory pricing and packaging practices should be barred.

12.2 Lack of programming access.—One major obstacle to potential multichannel competitors to cable operators is the lack of access to popular programming, much of which is denied to potential competitors as a result of exclusive contracts between programmers and the vertically integrated cable industry. Fair access to programming for all multi-channel providers is critical in order to encourage competition.

XIII. COMPETITION; MULTIPLE FRANCHISES; TELCO ENTRY

13.1 Competition.—(a) Consumers can be well served by a policy that fosters fair competition in the local cable marketplace. A competitive threat from a new entrant would provide a greater incentive to provide fair rates and improved customer service during the life of a franchise. A meaningful competitive renewal provision would provide one means of competition, as would fair programming access for potential multi-channel providers (see § 12.2 hereof).

(b) Support for fair competition to the cable industry does not mean that no local regulatory role is necessary if fuller competition emerges. The right of franchising authorities to require franchises, compensation for use of right of way and other community costs, PEG access and community programming, uniform service availability throughout a franchise area, and similar requirements to meet community needs must be maintained to serve the public interest even in a competitive environment.

13.2 Multiple franchises.—(a) NATOA's membership surveys demonstrate that the vast majority of local franchises are non-exclusive, and that local governments support competition. NATOA supports current federal law allowing a franchising authority to issue "one or more" franchises within its jurisdiction, at the franchising authority's discretion. NATOA members are well aware that the absence of head-to-head cable competition in the United States arises from the economics and monopoly nature of the cable industry, not local franchising requirements.

(b) Federal law should continue to allow—but not mandate—that local governments issue multiple franchises. A federal multiple-franchise mandate would impair a franchising authority's responsibility to determine an applicant's technical, legal, and financial qualifications; impede a franchising authority's ability to require that community needs be at; and invite expensive litigation from unqualified applicants. If any such inadvisable federal mandate is enacted, the language of such a mandate should at minimum protect the right of a franchising authority to deny unreasonable franchise requests.

13.3 Telco crossownership restrictions.—Present statutory, federal regulatory, and judicial crossownership restrictions prohibit the entry of telephone companies into the cable television business. Nevertheless, telephone companies continue to be leaders in developing new technologies that could benefit cable consumers.

13.4 Telco entry into cable television subject to local franchising.—(a) In order to foster competitive alternatives to cable operators, telephone companies, under proper safeguards, should be allowed to provide cable television services when, in the reasonable judgment of the franchising authority, such service is in the public interest. As a user of public rights of way and facilities in common with cable operators, telephone companies should be allowed to provide cable services (including any form of cable services such as "video dial tone") only under the framework of local franchising and regulation.

(b) Through the franchising process, local governments can ensure, among other things, that transmission facilities provide services which meet local needs and interests, including public benefit services; provide reasonable access, services, facilities and/or financial support for public, educational and governmental use; that the telco abides by consumer protection and other relevant local standards; that the telephone company provides service to all subscribers within its franchise area on a nondiscriminatory basis; and, that the telephone company pays the franchising authority a franchise fee as compensation (see § 9.1 hereof).

13.5 Safeguards governing telco entry.—(a) Congress should proceed cautiously in permitting telcos to own and distribute programming, and careful federal safeguards should be included. NATOA supports a requirement that telcos be authorized to provide cable services only through a separate video programming subsidiary. NATOA also supports a flat prohibition against cross subsidization by telephone ratepayers, and a limitation on telco programming ownership of its channel

capacity. Finally, NATOA supports a general prohibition against telcos acquiring existing cable systems within their telephone service areas, except in exceptional local circumstances subject to franchising authority approval (e.g. where a telco may be the only entity capable of assuming the operation of a poorly performing or abandoned cable system).

(b) The effects of telco entry should be comprehensively assessed by the FCC, states and franchising authorities to determine whether competition and consumer choice have been furthered.

13.6 Integrated cable and telco systems.—If a telephone company operates an integrated system which provides both cable and telephone services, the franchising authority should be authorized to regulate through the franchise process all matters affecting local community needs and interests. At a minimum, such local matters include consumer protection, customer service, public, educational, and government access, minimum requirements for cable system facilities and equipment, non-discriminatory service throughout a franchise area, and compensation to the franchising authority through payment of a franchise fee. Additionally, the telephone company must provide access to unaffiliated information service providers at non-discriminatory tariffed rates, offer switching and related services on a tariffed and unbundled basis, be prohibited by regulation from discriminating in favor of its own service offerings, and expand and upgrade its facilities as demand increases.

XIV. THE TELCO INDUSTRY: TELEPHONE LOCAL EXCHANGE CARRIERS (LECS)

14.1 Problems and Goals.—The FCC's decision to shift costs from long distance companies to local customers represents a long-term threat to the universal availability of telephone service at affordable rates. The break-up of the Bell system in 1984 has resulted in the imposition of restrictions on the types of services which can be offered by the Bell LECs, which reduce their economic incentive to upgrade plant and, in turn, limits the availability of innovative services to the American consumer.

14.2 National telephone policy.—National telephone policy should ensure the provision of universal high quality basic telephone communications service by LECs at affordable rates to consumers, preserve state and local authority to regulate intrastate communications, encourage technological innovation and implementation of new services, and enable the American telecommunications industry to compete in the global market.

14.3 Access Charges.—Long distance interexchange carriers (IXCs, e.g. AT&T, US Sprint, and MCI) should be required to pay a substantial portion of the non-recurring costs of local telephone plant to compensate for the use of local plant and to ensure affordable local rates and the universal availability of local service.

14.4 High Cost Areas.—The costs of providing telephone service in sparsely populated areas, where LEC costs are disproportionately high, should be partially financed by payments from a universal service fund established by or in cooperation with state public service (public utility) commissions in consultation with local franchising authorities, and funded equitably by LEC ratepayers and/or shareholders. The goal is to ensure universal service to rural Americans.

14.5 Lifeline Service.—Lifeline programs should be established and administered at the state or local level to assure access to LEC and IXC basic communications service at affordable rates for low income consumers.

14.6 Information Services.—The information services industry is expected to be the high-growth area of the American economy for the foreseeable future. The provision of information services by LECs should be subject to local franchising requirements and safeguards as set forth in Section 13 of this Policy.

XV. THE TELECOMMUNICATIONS INDUSTRY AND ALTERNATIVE CARRIERS

15.1 Local government planning and oversight role in telecommunications.—Because of the critical importance of telecommunications to local infrastructures (see § 1.1 and 1.2 hereof), a local government role should be reserved in planning and policy for all telecommunications markets serving customers in local jurisdictions. Such markets include cable television, interexchange carriers (IXCs), microwave and satellite programming distributors, cellular telephone, personal communications systems, teleport facilities, and local exchange carriers (LECs). The local government planning and oversight role should include consideration of fee requirements where appropriate, facilities, standards, and service availability. Such a role should be developed in conjunction with local government telecommunications planning and needs analysis.

15.2. Regulation of satellite/microwave facilities.—The federal government should not preempt or restrict zoning or other local requirements which regulate or

restrict the location, placement, size, or siting of facilities such as satellite dishes, radio towers, microwave transmitters/receivers and similar facilities. Such matters should be left to local government consideration and action, where any local regulations should be balanced with the need to promote effective competition to and among telecommunications providers and markets.

15.3 Long distance inter-exchange carriers (IXCs).—Following AT&T's 1984 divestiture, IXCs (including AT&T, US Sprint, and MCI) have developed advanced, competitive telecommunications systems which include voice, video and data as part of a national and global telecommunications environment. IXC's also have constructed and are continuing to construct advanced terrestrial fiber optic systems which in many cases must use local government rights of way to reach an LEC Point of Presence (POP) for connection to the local exchange telephone network. Such IXC systems should be subject to local franchising requirements, including payment of fair compensation for local right of way use.

15.4 Alternative access providers and networks.—AT&T's divestiture and Federal Communications Commission decisions have continued to open telecommunications systems (including LEC system architecture) to access and competition. The result has been continued development of LEC "bypassers" or alternative access providers (sometimes called Metropolitan Area Networks, Alternative Access Vendors, or Alternative Local Transport Providers) which often must use local government rights of way to construct facilities and systems to bypass the relevant LEC. Such alternative access systems and networks should be subject to local franchising and other applicable local requirements, including payment of fair compensation for local right of way use.

15.5 Cable institutional networks.—Local governments should continue to support cable system expansion into telecommunications markets and services, so that a broader cable role in telecommunications can continue to be developed. Cable institutional networks (or I-nets) can provide valuable alternative video, programming, and data services to local governments, schools and institutions, while at the same time enabling the cable operator to provide further advanced communications services within a community.

Senator BURNS. Thank you very much.

With us today is Irwin Popowsky, who is from the Office of the Consumer Advocate, from Harrisburg, PA. Thank you for coming down today. We appreciate that very much.

**STATEMENT OF IRWIN POPOWSKY, OFFICE OF THE
CONSUMER ADVOCATE, STATE OF PENNSYLVANIA, HARRIS-
BURG, PA**

Mr. POPOWSKY. Thank you very much, Senator Burns. And I truly appreciate this opportunity to address you on this important matter.

My name is Irwin Popowsky. I am speaking today on behalf of the Pennsylvania Office of Consumer Advocate, and also on behalf of the National Association of State Utility Consumer Advocates. The members of our organization are authorized by our respective State laws to represent the interests of public utility ratepayers, including the ratepayers of our regulated monopoly local exchange telephone companies.

I am here today because of our concern over the impact that passage of certain provisions of this legislation might have on the rates and services of the local exchange telephone company ratepayers, whom we represent.

And I am really only here to address one provision of the bill, and that is the legislative requirement that every local exchange telephone company in America prepare and carry out a plan which would establish an interactive broadband communications system for every business and household in the Nation by the year 2015.

Before the committee goes forward with legislation which would mandate accelerated deployment of a telephone-based broadband

network to every home in America, I would ask you to consider two questions: How much will it cost and Who will be required to pay for it?

As Chairman Inouye indicated earlier, it has been estimated that the cost of a nationwide fiber-to-the-home network for all local exchange carriers may well be in the hundreds of billions of dollars.

In a study which was recently completed for my office by Economics and Technology, Inc., of Boston, MA, it was estimated that the additional revenues required by Bell of Pennsylvania to cover the costs of accelerated installation of fiber cable and circuit equipment to all of its customers between the years 1992 and 2010 would be \$12.2 to \$15.5 billion. This equates to an additional revenue requirement of approximately \$20 per month per access line by the year 2010.

As to who will pay these costs, my fear is that much of the costs will be charged to basic local exchange customers. This may be especially true if Congress effectively mandates this new telecommunications infrastructure. After all, whether or not the multibillion-dollar investment turns out to be necessary or economical, telephone utilities will seek to recover their costs from the ratepayers, for whose benefit these costs were allegedly incurred.

In a resolution we adopted in 1990, NASUCA cautioned against the uneconomic and premature retirement of existing telephone equipment, and its replacement with fiber cable and other broadband facilities. NASUCA noted that the existing copper based network can provide a wide array of enhanced data and voice services. That is even more true today with compression technologies. NASUCA also feared that the premature deployment of a fiber broadband network could add billions of dollars to rates charged to the basic monopoly ratepayers, whom we represent.

More importantly, as some of the witnesses indicated here today, there are a number of alternatives to a telephone-based broadband network which can provide many of these same services, perhaps at a lower cost. I wish to make it clear that we do not oppose the deployment of fiber optics to the extent that it is economically justified. What does concern us is the premature and accelerated deployment of a ubiquitous fiber network in the absence of such an economic justification.

The question is not whether fiber is an economical and powerful alternative or replacement for copper in a growing number of applications in the telecommunications system. The question is whether Congress should mandate this or any other technology to meet all of our Nation's voice, data, and video needs in the year 2015.

While I support the goal of this legislation, to ensure that all Americans have the opportunity to share in the benefit of new information services, I question the assumption that the accelerated deployment of a telephone-based broadband network is the best or only way to achieve that goal.

Indeed, to the extent that premature deployment of such a network turns out to be uneconomical, or the demand for many new broadband services proves illusory, this Federal mandate actually could jeopardize the fundamental goal of universal telephone service at reasonable rates that has been the bedrock of most State and

Federal telecommunications policy for more than one-half a century.

I want to thank you again for having this opportunity to testify before you.

[The prepared statement of Mr. Popowsky follows:]

PREPARED STATEMENT OF IRWIN A. POPOWSKY

On behalf of the Pennsylvania Office of Consumer Advocate (OCA) and the National Association of State Utility Consumer Advocates (NASUCA), I wish to thank you for the opportunity to address this Subcommittee regarding the Communications Competitiveness and Infrastructure Modernization Act of 1991, S. 1200. The proposed legislation raises important issues concerning the modernization of our telecommunications system and I am pleased to have this opportunity to provide our comments on certain of these issues.

The Pennsylvania Office of Consumer Advocate was created by the Pennsylvania General Assembly to represent the interests of consumers before state and federal agencies and courts which regulate the activities of the state's public utilities. NASUCA is the national organization of state-designated utility consumer advocates, with members in 38 states and the District of Columbia. My Office is a member of NASUCA and I serve on the organization's Executive Committee.

I am here today because of my concern over the impact that passage of certain provisions of this legislation might have on the rates and services of the local exchange telephone company ratepayers whom I represent. In particular I am concerned with the legislative requirement that every local exchange telephone company in America prepare and carry out a plan which would establish an interactive broadband communications system for every business and household in the Nation by the year 2015.

Before this Committee goes forward with legislation which would mandate accelerated deployment of a telephone-based broadband network to every home in America, I would ask you to consider two questions: how much will it cost and who will be required to pay for it? I am very concerned about the likely answers to those questions.

First, the cost of a nationwide fiber to the home network for all local exchange carriers may well be in the hundreds of billions of dollars. In a study which was recently completed for my Office by Economics and Technology Inc. (ETI) of Boston, Massachusetts, it was estimated that the additional revenues required by Bell of Pennsylvania to cover the costs of accelerated installation of fiber cable and circuit equipment to all of its customers by 2010 would be \$12.2 to \$15.5 billion. This equates to an additional revenue requirement of approximately \$20 per month per access line by the year 2010. This is only the incremental revenue, over and above what Bell would be expected to require in a "business as usual" case in which existing copper cable is replaced by fiber only when it is economically justified. Moreover, this figure does not include the cost of broadband switches and software that would be required to provide many new services over the fiber lines. Nor does it include any of the direct costs to consumers of customer premises equipment needed to receive new services or the additional program costs for the services themselves. Finally, this estimate only includes the costs of Bell of Pennsylvania, and does not consider the charges that would be imposed on ratepayers of Pennsylvania's 40 smaller telephone utilities which would also be required to carry out accelerated broadband deployment plans under this Bill.

As to who will pay these costs, my fear is that the bulk of the costs will be allocated to basic local exchange customers, whether or not they want, need, or can afford any of the new services that are made possible by this expanded infrastructure. This may be especially true if the federal government effectively mandates this new telecommunications infrastructure. After all, whether or not this multi-billion dollar investment turns out to be necessary or economical, telephone utilities will seek to recover their costs from the ratepayers for whose benefit these costs were allegedly incurred.

In a Resolution passed in 1990, the National Association of State Utility Consumer Advocates (NASUCA) cautioned against the uneconomic and premature retirement of existing telephone equipment and its replacement with fiber cable and other broadband facilities. A copy of this Resolution is attached to this testimony as Appendix A. NASUCA noted that the existing copper-based network can provide a wide array of enhanced services, including data transmission, audiotext, gateway and CLASS services, and that the premature deployment of a fiber broadband network could add billions of dollars to the rates charged to basic monopoly ratepayers.

The NASUCA Resolution noted above also opposed the assignment to basic ratepayers of higher costs associated with the premature deployment of broadband facilities. This position was expanded upon in a Resolution approved by NASUCA in 1991, calling on the Federal Communications Commission to revise its cost separation and allocation methods in order to insure that local exchange ratepayers are not forced to pay a disproportionate share of broadband costs as part of their intrastate rates. A copy of this Resolution is attached to this testimony as Appendix B. NASUCA expressed its concern in this Resolution that the bulk of the costs associated with a new broadband network would be allocated to intrastate local exchange services, while the majority of the revenues would arise from services that would fall beyond the jurisdiction of state utility commissions. The danger is that basic service ratepayers will be forced to subsidize potentially unregulated new services that are made possible through the construction of a broadband network that is paid for by monopoly ratepayers, but is not required to meet their basic service needs.

While the proposed legislative mandate in 5.1200 does not specify the use of fiber in the broadband network, I must assume that most if not all telephone companies would propose such a network in response to the immediate requirements of the Bill. Indeed, that is one of the problems with the legislation in my view. It essentially requires every local exchange company in America to commit over the next two years to the network of the future to meet the audio, video, and data requirements of each of its customers in the year 2015. Moreover, it provides the imprimatur of the federal government on these plans, even before the full cost of these plans can be known and without regard to whether subsequent technological advances might make major portions of this extremely expensive fiber network uneconomical and unnecessary.

Many telephone companies already have made known their intentions to build a fiber network to or near the homes of their customers and they certainly do not require an Act of Congress to pursue those plans. Indeed, fiber already is being used extensively by long distance interexchange carriers and by local exchange companies for large interoffice facilities and some distribution facilities where it is economical to do so. While some telephone companies would like to insulate themselves from all risk by having Congress or their state legislatures throw them into the fiber patch, I believe that the technological battle that is now being waged should be determined by innovation, not legislation.

Implicit in the Bill's requirement of accelerated nationwide deployment of a fiber broadband network is the premature retirement—that is, ripping from the streets and poles—of many thousands of miles of existing copper cable, even though that cable can continue to provide reliable and economical service for many more years. While such replacement may indeed prove to be an appropriate decision in order to provide new broadband services in certain cases, that is a matter which is best determined on economic and technological grounds. It is also a matter which is best decided against the competitive backdrop of other technological means by which the same or similar services might be provided at lower cost to the individual consumer and to society as a whole.

Fiber optic technology certainly holds great promise to provide services that consumers may wish to receive in the future. Most telephone users today probably would not be satisfied with the level and quality of service they received in 1965, and I don't expect that customers in 2015 would be satisfied with the telecommunications services that are available today. But we have no way of knowing that a telephone-based fiber broadband network will necessarily be the most effective or economical means of providing audio, video, and data transmission to every home in America in the future. Alternative means of meeting present and future telecommunications needs already include satellite, coaxial cable, and the rapidly developing compression technologies over existing copper telephone lines. I fully support the goal of this legislation to insure that all Americans have the opportunity to share in the benefits of new information services as they arise. I question, however, the assumption that the accelerated deployment of a telephone-based fiber broadband network is the best or only way to achieve that goal. Indeed, to the extent that premature deployment of such a network turns out to be uneconomical or the demand for many new broadband services proves illusory, this federal mandate actually could jeopardize the fundamental goal of universal telephone service at reasonable rates that has been the bedrock of most state and federal telecommunications policy for more than half a century.

As to the need for federal legislation on this issue, I would agree with Federal Communications Commissioner Sherrie Marshall, who recently wrote that she would not "elevate the rapid deployment of broadband fiber to the home to a national goal." Separate Statement of Commissioner Marshall, Re: Telephone Company—Cable Television Cross-Ownership Rules, CC Docket No. 87-266 (Released

November 22, 1991). As stated by Commissioner Marshall: "That crosses the line into industrial policy of the worst kind—particularly when other, less costly technologies might meet our competitive needs over the short term." In the same docket, Commissioner Ervin S. Duggan warned against "policymaking by the method of Procrustes' bed, in which he hacked off the inconvenient limbs of guests who did not fit the bed."

I am particularly concerned that this Procrustean policymaking would initially occur in Washington, rather than in the states and localities where the costs of these decisions will be borne. While this Bill is not entitled a "Federal Telecommunications Infrastructure Tax", the members of this Committee must recognize that the premature imposition of massive broadband deployment costs on monopoly local exchange telephone customers might have much the same effect. While a multi-billion dollar fiber network might be one way to improve education and health care, for example, state and local governments might believe that their constituents' scarce resources are better spent on new schools and hospitals.

The fiber broadband network is often compared by its advocates to an "electronic highway" for information. But just as many people neither want nor need a six-lane highway leading directly into their garage, so many consumers may choose not to have a multi-lane electronic information highway into their home telephone. This is particularly true if they can receive comparable services at lower cost from other audio, video and data sources.

Representatives of monopoly local exchange company ratepayers do not wish to see our clients deprived of the ability to access any of the information services of the future. Rather, we wish to assure the availability of economical telecommunications services to all consumers, including the ability to obtain the greatest possible array of new and enhanced information services to enrich their lives. We fear, however, that this goal will not be achieved by legislation which prematurely selects a particular method of meeting all of our Nation's future telecommunications needs.

NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES RESOLUTION—OPPOSING THE UNECONOMIC AND PREMATURE REPLACEMENT OF TELEPHONE PLANT AND FACILITIES

Whereas, some members of the telecommunications industry and others are urging retirement of existing telephone equipment and facilities such as copper wire and electronic stored program controlled switches in favor of deploying fiber optic cable throughout the local exchange distribution system and installing a new generation of switching equipment and other broadband technologies; and

Whereas, some members of the telecommunications industry and others claim the need to replace such existing facilities to repair the position of the United States telecommunications network which, in their view, has become "second class"; and

Whereas, the retirement and replacement of existing telephone plant is being proposed to allow telephone companies to provide enhanced broadband services such as interactive video and information services and to provide television programming over the replacement facilities; and

Whereas, the telephone network of the United States is not technologically inferior to the networks of other nations in view of these facts:

- The United States has more lines per capita than any other industrial country;
- The United States has one of the highest penetration rates of telephone service of any industrial country;
- The United States has a greater percentage of access lines served by electronic switching than any other industrial nation;
- The United States has more lines served by digital switching than any other nation;
- The United States has made a greater investment per access line than any other country; and

Whereas, upgrading the present telephone distribution plant to deploy fiber optic cable to individual subscriber premises is estimated to cost between \$230 and \$250 billion, doubling the gross value of invested local telephone assets; and

Whereas, replacing the existing switching technology with broadband switches is estimated to require between \$40 and \$50 billion of new investment; and

Whereas, the premature retirement of present plant and facilities and its early replacement with fiber optic cable and broadband facilities may be accompanied by more rapid depreciation rates and associated rate increases for basic telephone rates which could cost monopoly ratepayers billions of dollars in rates that are higher than required to provide basic local telephone service; and

Whereas, the deployment of fiber optic cable into the distribution network and the replacement of present switching technology with new generations of broadband switches may occur without premature deployment of fiber optics or broadband facilities and without subsidization by consumers through rates for basic exchange service; and

Whereas, the existing telephone network can provide a wide array of enhanced services, including high speed data transmission, audiotext, gateway and CLASS services without the deployment of fiber optic and broadband technologies.

Therefore, be it resolved that the National Association of State Utility Consumer Advocates (NASUCA) opposes the premature, uneconomic retirement of existing telephone facilities and the installation of fiber optics or broadband facilities when such replacement will increase the rates for basic telephone service or cause the rates for basic telephone service to be higher than necessary; and

Be it further resolved, NASUCA opposes the assignment to basic telephone rate-payers of any of the higher costs associated with the premature deployment of broadband technologies; and NASUCA states that the only effects on basic telephone rates of deploying such facilities should be to lower the rates for basic service or cause the rates to be lower than they otherwise would be; and

Be it further resolved, that NASUCA' authorizes its Executive Committee to develop specific positions and to take appropriate actions consistent with the terms of this resolution. The Executive Committee shall advise the membership of any proposed action prior to taking such action if possible. In any event, the Executive Committee shall notify the membership of any action taken pursuant to this provision.

NATIONS ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES RESOLUTION—URGING THE FEDERAL COMMUNICATIONS COMMISSION AND THE JOINT BOARD TO REVISE THE PRESENT ALLOCATION OF SUBSCRIBER OR COMMON LINES USED FOR LOCAL EXCHANGE SERVICE IN ORDER TO REFLECT THE CHANGING USAGE OF THOSE LINES FOR BROADBAND SERVICES

Whereas, the Federal Communications Commission will separate the costs of subscriber or common lines used for local exchange service 75 percent to the intrastate jurisdiction and 25 percent to the interstate jurisdiction;

Whereas, local exchange carriers have begun deploying optical fiber in the distribution loop. This will allow consumers to use services which require broadband capacity, and various states have encouraged their local exchange carriers to provide such broadband capacity;

Whereas, local exchange carriers have initiated demonstration projects which provide video service to subscribers and the provision of video service may increase as the deployment of fiber distribution plant increases;

Whereas, the Federal Communications Commission has asserted interstate jurisdiction over the transmission of video signals locally whenever those signals originate from other states. It presently appears that, if the local exchange carriers offer increased transmission of multi-channel video services over their loop facilities, the majority of such services and revenues may be beyond the jurisdictional authority of the state commissions while intrastate jurisdictional services would continue to be responsible for 75 percent of the cost of subscriber common lines not considered to relate to regulated services by the FCC;

Whereas, the Joint Board is scheduled to consider revising the separations factor applicable to subscriber or common line costs at their meeting on November 12, 1991;

Whereas, it would be inequitable for the local loop system to be rebuilt at great expense by local exchange carriers in order to provide the capability to provide broadband services and 75 percent of the costs related to regulated services related to such reconstruction continue to be applied to intrastate services while the majority of the revenue generated by broadband services may not be subject to state jurisdictional authority;

Therefore, be it resolved, that the National Association of State Utility Consumer Advocates calls upon the Joint Board and the Federal Communications Commission to revise the separations factor by which 75 percent of the costs of subscriber or common lines jointly used for local exchange service are allocated to the intrastate jurisdiction and the manner by which non-regulated costs are removed from the costs related to regulated authority;

Be it further resolved, that NASUCA urges the Joint Board and the Federal Communications Commission to revise the separations formula or cost removal method

in order to fairly reflect the extent to which broadband services shall be transmitted over subscriber or common lines;

Be it further resolved that NASUCA authorizes its Executive Committee to develop specific positions and to take appropriate actions consistent with the terms of this resolution. The Executive Committee shall advise the membership of any proposed action prior to taking such action if possible. In any event, the Executive Committee shall notify the membership of any action taken pursuant to this resolution.

Senator BURNS. Thank you very much, Mr. Popowsky.

We have with us Phil Verveer, counsel, National Cable Television Association. And Mr. Verveer, thank you for coming. We look forward to your testimony.

STATEMENT OF PHIL VERVEER, COUNSEL, NATIONAL CABLE TELEVISION ASSOCIATION, WASHINGTON, DC

Mr. VERVEER. Thank you, Senator. I appreciate this opportunity to share my views on S. 1200.

I would like to make some central points regarding the bill. First, the premise of S. 1200 is faulty. The bill assumes that the United States needs a prototelephone company industrial policy in order to secure economic expansion and to compete internationally. That is not correct.

Second, regulatory safeguards have not protected, and they will not protect consumers or competition if telephone companies get into the television business. Now, over the past decade this committee, and indeed most governmental arms in our society, have pursued communications policies that emphasized diverse information services and providers. That policy is working. And it has produced a highly diverse and competitive communications marketplace.

There is a very important point that I hope will not be missed in the deliberations over S. 1200, and the important concerns you have brought to the fore by sponsoring the bill. And that is, there is nothing in current law that prevents telephone companies from building advanced communications networks, including fiber to the home. In addition, virtually every information service conceivable, except video, can be provided today over the telephone company's existing facilities.

Yet, S. 1200 would establish a national mandate for a nationwide broadband network, and would explicitly choose the telephone companies to construct and control this network. It specifies no role for the many specialized networks currently in operation in our country. It envisions no role for broadcasters, cable operators, cellular companies, newspaper or magazine publishers, satellite providers, or alternative access providers.

In that sense, the bill assumes that we must pick winners—the telephone companies—to ensure that the United States can meet foreign competition. That assumption is wrong. Our telecommunications infrastructure is not second rate today, and there is no reason to predict that it will become so in the future.

It is noteworthy that Japan and France, two nations often cited for their progressive telecommunications policies, have the same content restrictions on their telephone companies as we do. Telephone companies overseas may not own TV programming. This separation between content and conduit is an essential one, for rea-

sons I will address in my second point. That is, that regulatory safeguards generally do not work.

Cost of service regulation prevents local telephone companies from fully exploiting the economic value of their monopolies by limiting their profits. A telephone company's economic incentive is to evade these constraints, in order to fully recognize the value of the local distribution monopoly that it possesses. The consequence of this reality is very well understood.

Telephone companies have an incentive to integrate into adjacent business, not necessarily because they are efficient providers, but because integration facilitates regulatory evasion. The means for regulatory evasion are cross subsidies and discrimination.

I know you have heard a great deal of testimony on those subjects, both today and at all the other hearings through the years. The victims of these practices are telephone ratepayers, and also competitors and consumers in unregulated service markets.

Now, the safeguards that are proposed in S. 1200, and are proposed in other contexts in our telecommunications policy discussions, attempt to prevent these kinds of misconduct. But they do not, and they cannot, alter telephone company incentives to engage in that misconduct. Many of the safeguards in S. 1200 have been tried, and they have failed.

We have prominent recent examples in the NYNEX Materiel Enterprises controversy—an example of cross-subsidization that became the subject of State and Federal regulatory action. We have an example of discrimination in the U.S. West/GSA controversy, that ultimately was at least partially responsible for producing a \$10 million civil fine in the AT&T consent decrees.

Notwithstanding regulatory and legal rules prohibiting misconduct, it occurred. And even though it was not particularly subtle, it took years for the Government to detect and to sanction the conduct.

In closing, NCTA shares the goals of the authors of S. 1200—that is, to ensure that the United States enjoys the benefits of an evolving communications infrastructure that meets this country's future needs. We believe, however, there is a more efficient and affordable way to reach that goal. That is, to continue to promote diversity among providers of telecommunications services, rather than to place a critical bet on a single industry.

For these reasons, Mr. Chairman, I urge this committee to maintain our Nation's current policy. Thank you.

[The prepared statement of Mr. Verveer follows:]

PREPARED STATEMENT OF PHILIP L. VERVEER

I. INTRODUCTION

Mr. Chairman and members of the subcommittee, my name is Philip L. Verveer. I am a member of the law firm of Willkie Parr & Gallagher and appear before you today on behalf of the National Cable Television Association. We appreciate this opportunity to discuss our opposition to S. 1200, the "Communications Competitiveness and Infrastructure Modernization Act of 1991."

For several decades, the policy of the United States has been to promote diversity and competition in the telecommunications marketplace. An important component of this policy has been the cable-telco crossownership ban, which recognizes that telephone companies have strong economic incentives to use their market power and control over essential telecommunications facilities to thwart competition at their epayers' expense. The goal of encouraging diversity has been remarkably success-

ful, and it is now possible for the consumer to use a variety of media to obtain an ever-increasing range of voice, data, video, and other information services.

S. 1200 proposes to reverse this trend by embracing an industrial policy which reinstates the telephone dies as providers of most if not all telecommunications services. Yet the fact is that anticompetitive incentives confronting telephone companies remain strong today—just as when the cable-telco crossownership ban was first promulgated by the FCC in 1970. Moreover, the “safeguards” proposed in S. 1200 to restrict such behavior will not work. Removing or relaxing the crossownership restrictions in the name of “infrastructure development” or “competition therefore, will benefit only the telephone dies and will hurt consumers—who will pay hundreds of billions of dollars in higher telephone rates to construct the telcos’ one-wire world.

S. 1200’s premise for this about-face in U.S. policy is that the United States is about to fall behind other nations in developing and deploying a modern, competitive telecommunications infrastructure. To meet this foreign threat, S. 1200 proposes that we provide telephone companies with incentives to build a one-wire, fiber-to-the-home network.

This premise is seriously flawed. As this statement will demonstrate, the United States leads the world in the development of a modern telecommunications infrastructure and competitive information services. Moreover, there are serious technical and economic questions about whether a one-wire network is the “right choice.” The nub of the problem in letting telephone companies into any other line of business is the possibility of cross-subsidies from their telephone monopoly. Until and unless the telcos’ monopoly in the switched voice business is ended, no level of governmental safeguards against cross-subsidies will be effective. A pro-telco industrial policy is thus unwarranted and ill-advised, and should be rejected by the Committee.

II. HISTORICAL OVERVIEW: THE TREND TOWARD DIVERSITY AND DECENTRALIZATION

Telecommunications in the United States have evolved greatly over the past 20 years. Once dominated by a handful of closely regulated telephone and broadcast firms, the industry now boasts a wide variety of competing providers which use a multitude of new technologies to meet the increasingly sophisticated communications needs of businesses and consumers. For example, television—once defined in terms of the three broadcast networks and public television (and perhaps an independent station or two)—now encompasses an abundance of video choices including dozens of satellite-delivered cable programming services. On top of these, the past fifteen years have been marked by a significant growth in over-the-air broadcasting stations as well the emergence of a fourth commercial broadcasting network.

Many new information service providers have emerged as well. The goal espoused in S. 1200—increased reliance on the public switched network as the primary, if not sole, source of all voice, data, and video services—runs contrary to this trend and would jeopardize the benefits of a competitive marketplace.¹

A. *The U.S. Government has long encouraged market competition and network pluralism*

The last two decades have seen a rapid development of competition in much of the United States’ telecommunications marketplace.² In 1968, the communications market was controlled by a limited number of large, commercially dominant players. “Technological stability, institutionalized barriers to new entry, relatively rigid government regulations, and scant service competition prevailed.”³ The result was a relative scarcity of customer choice.

Basic voice telecommunications were largely the province of the Bell System; telephone companies were vertically integrated; and telephone operations were extensively regulated at both the state and federal levels. Video communications were dominated by three national broadcast networks and their owned-and-operated local stations, which accounted for more than half of the nation’s television revenues annually. Cable television systems served approximately six percent of U.S. households, and there were no backyard dishes or receivers and no satellite distribution systems. Computer inventory consisted mainly of large mainframe installations, and

¹ See for example the testimony of the American Newspaper Publishers Association in opposition to the provision of information services by telephone companies (House Judiciary Subcommittee on Economic and Commercial Law: August 1, 1991, and February 19, 1992).

² National Telecommunications and Information Administration/Department of Commerce, NTIA Telecom 2000: Charting the Course for a New Century; pp. 21–41 (October 1988; herein after Telecom 2000).

³ *Ibid.*, p. 22.

the computer/information services market was discrete from the telecommunications market.

Twenty years later, competition has begun to take hold in many segments of the telecommunications industry. Most notably, with the break up of the Bell System, consumers have access to a wide variety of alternative long-distance carriers. A variety of market participants have incorporated sophisticated new technologies, including satellite and fiber optics, into the telecommunications infrastructure. Although there exists no real substitute for the telcos' local loop, private communications systems are proliferating along the edges of the public switched network. And even though commercial broadcasters remain the chief source of television news, information, and entertainment—drawing 60 percent of the audience share—60 percent of all households now subscribe to cable, enjoying access to an average of three dozen channels of programming.

As the National Telecommunications and Information Administration recognized in its Telecom 2000 report, this dramatic change in the structure of the telecommunications industry was in large measure the result of government policies intended to foster competition. Competition, in turn, enhanced consumer choice by decentralizing control over the nature and cost of telecommunications services:

Divestiture and steps toward deregulation were grounded on assumptions that many communications markets had or could become actually or potentially competitive. A goal was to foster that competition and, by so doing, expand customer choice while more closely aligning prices with costs. A parallel goal was reducing the level and intensity of government economic regulation of the telephone business to encourage innovation, stimulate efficiency, and lessen interference with private decisionmaking generally. * * *

A benefit of competition and new entry characteristic of most U.S. domestic and international communications markets has been a *heightened opportunity for more people to participate, and hence desirable dispersion of commercial decision making*. Just as competition has tended to broaden customer choice, it has also generally afforded more and more individuals a greater chance to compete to satisfy that expanded choice.⁴

With the advent of competition, the nature of the telecommunications infrastructure underwent a similar transformation. For almost a century, the concept of "infrastructure" was synonymous with the public switched network. In turn, that nationwide telephone network was operated, regulated—and in fact protected—as a monopoly.⁵ For a time, the relative simplicity of telecommunications technology and the similarities among the needs of telecommunications users may have supported the establishment and maintenance of a large, centralized public network.⁶ But governmental regulation (including entry restrictions) preserved the monopoly long past the time when technological changes and customer needs would have prompted better, cheaper, and more varied services.

Although the centrifugal forces of user demand and technological development have caused some decentralization of the public network,⁷ the local telephone network remains the essential vehicle for transporting virtually all telecommunications traffic. There are significant predictions being made today that "the number of communications networks that comprise the communications infrastructure is likely to multiply in the future."⁸ On the other hand, legislation that would commit American consumers to a particular technology supplied by the telephone company would re-establish a regulatory policy that focuses on how to make a better monopoly—not a better marketplace.

In short, technology and the changing demands of users are forcing a transition from an all-encompassing public network to an infrastructure that comprises the public network as well as specialized facilities designed to serve specialized needs. The extent of future developments is still being debated, but little can be expected if government policy dictates monopolization of the telecommunications infrastructure by the telephone companies. The increasingly differentiated needs of tele-

⁴Ibid., pp. 29, 33 (emphasis supplied).

⁵Noam, "Network Pluralism and Regulatory Pluralism," in 1 New Directions in Telecommunications Policy 66 (Newberg ed. 1989) (hereinafter Network Pluralism).

⁶Network Pluralism, p. 69; U.S. Office of Technology Assessment, Critical Connections: Communications for the Future, OTA-CIT-407 (1990), p. 71 (hereinafter Critical Connections).

⁷Large businesses, spurred by the desire to enhance productivity and aided by a growing array of telecommunications technologies, have more sophisticated telecommunications needs than small business or residential consumers. These needs may also vary from business to business. Thus, banks and other financial institutions have developed specialized communications services that are different from the services demanded by manufacturers. Critical Connections, p. 71.

⁸Ibid.

communications users, technological innovations, and the lessons of prior communications policy make clear that it is neither good policy nor good economics for that network to remain all things to all people.

B. Government policy has worked as intended to foster a decentralized communications structure which meets consumer needs and promotes competition

Since 1984, a pluralistic telecommunications infrastructure has been evolving in the United States, providing consumers with a wealth of choices among modern information age services. To the extent that it exists, this decentralized infrastructure has already provided several benefits. As the Consumer Federation of America and the American Association of Retired Persons reported in their study, "Expanding the Information Age for the 1990s: A Pragmatic Consumer Analysis":

Telephone and cable television service are approaching universal availability. With 40 million personal computers (PCs) deployed in the business and residential sectors, and rapid spread of PCs likely to push this number to the range of 60 to 80 million in the near future, there is no technological barrier to an information age mass market * * *

PC-based services are also widely available, with thousands of information age vendors offering a broad array of services * * * The number of subscribers has been growing at almost 20 percent per year. Yet, only about one twentieth of the potential market has been penetrated (p. ES-1).

* * * [T]he decentralized model for the deployment of information age services is preferable for both economic and social reasons * * * It is achieving rapid deployment of services under conditions in which individual choices are paramount. Because there are likely to be few barriers to the information age for the vast majority and many of the services that will be offered are luxuries, the pragmatic evaluation of the value of services on an individual basis will maximize consumer sovereignty and welfare (p. ES-4).

With regard to existing crossownership restrictions, the CFA/AARP report concluded:

There is no need to relax restrictions on local telephone companies["] involvement in cable TV, information services or equipment manufacture. In fact, allowing telephone a to move beyond their role of conduit could set information age developments back by undermining the diversified, innovative processes of the current decentralized approach and burdening ratepayers with the excess costs and cross-subsidization of an inefficient technology (p. ES-6).

III. THE PREMISES UNDERLYING S. 1200 ARE FLAWED

According to its promotional material, S. 1200, the "Communications Competitiveness and Infrastructure Modernization Act," is intended to "modernize" our nation's telecommunications infrastructure by the year 2015 so that we may better compete in world markets with countries like Japan. However, the competitiveness rationale being used to justify forced investment in a one-wire world is not supported by the facts: despite claims to the contrary, the U.S. is at the cutting edge of technological developments in telecommunications. As such, the pro-telco industrial policy contained in S. 1200 is at odds with historical and technological reality. If adopted, S. 1200 would inhibit competitiveness and reduce consumer choice in the United States by giving the telcos a federal mandate to own and control our nation's communications infrastructure.

A. The United States leads, not trails, the world in telecommunications

Proponents of "jumpstarting" a national fiber network by permitting the phone companies to enter television contend that the U.S. must do so in order to keep pace with other industrialized countries, who allegedly are ahead of the U.S. in terms of network modernization. However, the U.S. remains far ahead of France, Germany, the United Kingdom, and Japan in terms of the performance and usage of the public telecommunications network.⁹ To maintain this edge, the U.S. telecommunications industry invests from 45 to 86 percent more on a per phone line basis than other industrialized nations like Japan and France.¹⁰

Both telephone companies and cable companies are employing fiber technology where it makes economic sense. The problem with telephone company diversification into television programming is that it does not provide any apparent benign economic reason to hasten the construction of fiber. Rather, it appears merely to provide an excuse for uneconomic installation of fiber. Yet in Japan, France, and the

⁹ Economics and Technology, Inc., *The Telecommunications Infrastructure in Perspective*, March 1990: p. 4.

¹⁰ *Ibid.*, p. 25.

United Kingdom—frequently cited as countries which are “ahead” of the U.S. in terms of fiber deployment—telephone companies are prohibited, with only limited exceptions, from controlling the content of the information distributed over their facilities.

Some of the telephone companies’ erroneous claims regarding “competitiveness”—and the facts in the matter—are as follows:

Assertion: Japan is rushing to complete a national “information highway” based on fiber optic technology, and the U.S. must follow suit.

Fact: A Japanese official has acknowledged that Nippon Telegraph and Telephone, Japan’s national telecommunications monopoly, has not received approval to begin building its highly-touted broadband network.¹¹ Japan’s plans do not involve bringing fiber-to-the-home in this century, but rather moving fiber closer to the home and using conventional copper wire and cable facilities to deliver services to subscribers.¹² Indeed, the January 1992 edition of *Lightwave* reported that:

In a recent trip to New York, Masashi Kojima, president of Nippon Telegraph and Telephone, expressed doubts about Japan’s heralded plan to connect by fiber all of the country’s 45 million households by the year 2015.

Kojima called the \$60-billion project, which will be coordinated by the state-owned NIT, as “expensive beyond our imagination.” Kojima agreed with analysts’ estimates of fiber-optic installation costs being about \$3000 per household compared with around \$800 for copper. Fiber-optic cables will have to be carefully evaluated, Kojima said, especially when the fiber is strung to large numbers of households later this century. In a neighborhood of 10 homes, three homes may want fiber services, although seven may not; the service and the cost of installation, however, would still have to be figured for all 10 homes (p. 3).

Whatever NIT’s plans are for the deployment of fiber, they do not require the “financial incentive” of video programming: NIT is barred from providing cable television services, and cannot even lease channel capacity to unaffiliated video programmers.

Assertion: France’s Minitel system places that country ahead of the U.S. in the availability of advanced telecommunications services and facilities.

Fact: The government-owned telephone system in France does not provide any of the information services available over Minitel except Yellow Pages; it provides only the transmission capacity, and contracts with independent third parties to make such services available. No regulation, statute, or judicial decree prevents U.S. telephone dies from offering transmission capacity to information service providers, or from offering transmission “gateways” through which consumers can access those services.

In any event, Minitel is hardly a smashing success. Despite the fact that Minitel offers free terminals, only 20 percent of French telephone customers subscribe to it.¹³ Minitel has sustained large annual losses—subsidized by French taxpayers—and its most popular services (accounting for 80 percent of total traffic on the system by the late 1980s) are “chat” lines that allow users to engage in sexually explicit conversations.

Moreover, in comparing the centralized French telephone system with the decentralized American model, the American Association of Retired Persons and the Consumer Federation of America concluded as follows:

In spite of a vigorous policy to force the deployment of information age services in France, there is little basis for an indictment of the diffusion of key technology—personal computers—or the availability of services in the U.S. The potential market in the U.S. is quite large and numerous service providers are attempting to exploit that market. *The French effort may reflect largely a need to catch up—have lagged in the quality of paper directories and the diffusion of more intelligent PCs—rather than an effective strategy to get ahead.*¹⁴

Assertion: The telcos are consistent in their arguments both at home and abroad in favor of lifting cross-ownership restrictions on the provision of video services.

Fact: U.S. telephone companies, which are significant investors in Britain’s cable industry, opposed the entry of British Telecom (BT) into the cable market for fear that BT would cross-subsidize its video services with telephone revenues and drive independent cable operators out of business. A Pacific Telesis executive said: “If BT

¹¹ Multichannel Newsday, May 23, 1990: p. 14.

¹² Kevin McGilly, et al.: *Lessons from the Fiber-to-Home Trials*, Annenberg School for Communications, University of Southern California; November 1990: p. 25.

¹³ France Telecom, Annual Report, 1990: p. 8.

¹⁴ Mark Cooper, *Expanding the Information Age for the 1990s: A Pragmatic Consumer Analysis*, 1/11/90: p. 64; emphasis added.

comes into the TV market, we would be in a very, very difficult situation. They would have to cross-subsidize [their video services with phone revenues], and if that happened, we would pack up and go home."¹⁵ Convinced by such arguments, the British Government continues to forbid BT's participation in cable television. That same concern has been raised in the U.S. by consumer groups and others who oppose the efforts of U.S. telephone companies to diversify into businesses unrelated to the provision of universal, affordable local telephone service.

Assertion: U.S. investment in the telecommunications infrastructure lags behind other industrialized nations.

Fact: A study by the International Communications Association and the Consumer Federation of America concluded that the U.S. remains "far ahead" of France, Germany, the U.K., and Japan as measured by "virtually every viable indicator of the performance and usage of public telecommunications networks".¹⁶ For example:

- The United States has the highest penetration level of telephone lines to subscribers (93.6 percent of households) in the world (FCC Telephone Trends Report, August 7, 1991).

- The U.S. public network's peak performance and usage levels—perhaps the best overall indicator of telephone service quality—far exceed that of other nations (less than one percent of the Bell telephone companies' calls are blocked, compared to 2.5 percent in France). Similarly, while U.S. telcos offer touch-tone on 65 to 90 percent of their access lines, only 50 percent of French lines and 20 percent of Japanese lines offer this feature (CFA/ICA Study, pp. 10–11).

- The U.S. has a system of 800 services which can be used to access a variety of computer-based information services—something foreign countries are only starting to do.

Moreover, the U.S. telecommunications infrastructure is not limited to the public telephone network operated by the regional Bell and other local exchange companies. Although a vast array of telecommunications services are provided over the public network, other services are provided via sophisticated terminal devices, where the intelligence is in the equipment rather than the telephone company's central office. Services are also offered via private networks such as local and metropolitan area networks (LANs and MANs), cable I-Nets, and communications satellites. At the local level additional services are available, including shared tenant services, cellular radio systems, paging networks, teleports, and private networks. Consumers have access to a wide variety of long distance carriers and value-added networks.

Under existing law, the information services industry is thriving: More than 1,000 different dies provide consumers with more than 4,000 electronic databases; 1.7 million subscribed to videotex services in 1990, and 5.6 million households are served by electronic mail. Voice information services, universally available to those with touch-tone telephones, are set to grow from \$500 million in 1988 to \$4–\$5 billion by 1995. It is estimated that the information services industry will achieve revenues of \$10.8 billion in 1991 and experience an annual growth rate of 20 percent through 1995.

U.S. investment in telecommunications is also paying off in exports to world markets. According to the U.S. Commerce Department, the U.S. telecommunications equipment trade deficit continues to narrow, and was reduced by 59 percent in 1990 alone (from \$1.94 billion to \$792 million). This dramatic improvement in American competitiveness over the last few years took place without any change in our nation's laws or the consent decree which led to the break up of the Bell System in 1984.

Assertion: New information services can only be made available through the widespread deployment of fiber optics.

Fact: All information services can be made available over today's telephone network (which includes increasing amounts of fiber, deployed on an economically rational basis). Only full motion video cannot be delivered to the home via a copper telephone line—but 90 percent of all U.S. households have access to a coaxial cable that is capable of delivering video to the home. Satellite, broadcast, and cellular technologies can bring a variety of other services to homes, schools, and businesses; in fact, broadcast television stations reach 98 percent of all homes in the United States.

Assertion: Artificially stimulating the widespread deployment of fiber facilities will not involve huge amounts of government money.

¹⁵ Reuters, Cable TV Could Give U.S. Phone Firms U.K. Foothold, September 24, 1990.

¹⁶ Montgomery, Selwyn and Keller, The Telecommunications Infrastructure in Perspective, March 1990: p. 4 (hereafter the CFA/ICA Study).

Fact: Installing a new fiber optic line to every home in the nation, along with replacing all of the telcos' central office equipment, would be enormously expensive. Recent cost-per home estimates range from \$3,000 (Bellcore) to \$5,650 (Telecommunications Industries Association), with the cost of wiring all U.S. households running as high as \$525 billion—money that consumers will pay in the form of higher telephone bills well into the next century for facilities and services most neither need nor want. The increase in telephone bills (in Florida alone, the CFA estimated the increase to be \$5 per month for 30 years) is just as much a “tax” on consumers—who must pay it or do without telephone service—as if it were levied directly by the government itself. Moreover, if the telephone companies find themselves overextended on risky investments that do not pay off, a direct infusion of government money may be necessary—as was the case recently with banks and S&Ls—to ensure the continued availability of basic telephone service.

B. Cable companies as well as telcos are deploying new fiber technologies

1. Fiber Optics in Modern Telecommunications

One of the most unfortunate aspects of S. 1200's industrial policy tilt toward the telephone companies is its lack of attention to the reality that cable companies, as well as telcos, are developing innovative fiber technologies. As early as 1982, cable companies began deploying fiber as a cost-efficient means of providing greater reliability, better signals, and interactive video and information services. Recent developments have rendered fiber technology even more appealing and have warranted its aggressive deployment by cable systems throughout the country. In fact, all of the twenty largest multiple system operators (MSOs) already have begun installation of fiber within their systems, with the amount of fiber installed by these companies increasing 400 percent since 1988 (see Appendix A, Cable Industry Use of Fiber). Current estimates indicate that the cable industry's deployment of fiber is expected to grow at an annual rate of 25 percent over the next decade. Adoption of a policy which threatens the continued viability of these investments and which favors those of the telephone companies would be anticompetitive, costly, and unwarranted.

Optical fiber technology uses very thin strands of glass to carry light signals generated by laser transmitters or other light sources. Information can be carried by light in much the same way as information is carried by electronic signals over the copper “twisted pair” wire used by telephone systems for voice and data, and over the coaxial cable used by cable systems for transmitting video and data. Fiber has wider bandwidth or carrying capacity than traditional copper twisted pairs, although fiber, in its current applications, does not have more usable bandwidth than coaxial cable.

2. Cable's use of fiber

The main advantage of fiber is that signals can be carried greater distances with lower loss of power and less need for amplification. The amplifiers needed to strengthen cable signals degrade the signals somewhat, and long stretches or “cascades” of amplifiers over a given length of cable can eventually cause poor signal quality and a loss in the number of channels that can be delivered. Fiber has a greater ability to carry signals without losing power. Consequently, fiber allows systems to reduce the number of amplifiers between the headend and the customer; it also allows operators to avoid deploying amplifiers in longer “supertrunk” lines. The elimination of amplifiers results in overall lower plant costs, despite the current higher cost of fiber and associated electronics.

Improvements that result from the cable industry's installation of optical fiber include:

Cost Effective Upgrades of Channel Capacity—The existing coaxial cable to every home is theoretically capable of carrying 160–170 channels of standard, 6-mHz NTSC television. Reducing the number of amplifiers in a cascade between the headend and customer through the use of fiber allows significant channel upgrades without expensive replacement of the cable “drop” to each individual home.

Improved Reliability—Because there are fewer amplifiers in a typical cascade to fail in a fiber-enhanced system, there are fewer customers affected by any given individual amplifier failure. Jones Intercable's fiber-based cable system design in Augusta, Georgia, for example, will cut cable service outages from one or two per year to one every five years.

Reduced Operating Costs—Systems with many amplifiers spend more on maintenance because amplifiers must be “balanced,” or electronically fine-tuned, in order to give the best performance. Because fiber reduces the number of amplifiers needed in a cascade, it takes less time to balance a line or find a faulty amplifier. These efficiencies can reduce a cable system's operating costs. For example, Cablevision

Systems in Hammondsport, New York, estimates that it saves 500 employee-hours annually in maintenance costs by installing just ten miles of fiber.

Improved Signal Quality—Because of the reduced number of amplifiers between the headend and customer, transmissions along fiber optic cable degrade far less quickly and result in a stronger, clearer picture at the receiving end. Fiber also may be used to replace microwave transmission links which are subject to radio interference. Maclean Hunter Cable TV, for example, expects an immediate increase in picture quality from its fiber-based cable system in northern New Jersey.

a. Evolutionary applications of fiber in cable systems

Fiber technology is commonly employed by the cable industry to improve communications that require high capacity connections between two locations, known as point-to-point communications. Common examples are the linkage of separate headends or "supertrunking"; the linking of remote production studios (for example, facilities which record local government meetings for the government access channel) with the headend; and connecting the headend with a satellite dish or antenna which must be located away from the headend.

The more evolutionary applications of fiber include the creation of "fiber backbones" and "Cable Area Networks" in which fiber links are constructed between the system headend and various points in the distribution network. These more extensive uses throughout the system bring fiber closer to the customer and eliminate heavy dependence upon amplifiers and other electronics to deliver television signals to the home. As noted earlier, reductions in amplifier cascades result in dramatic improvements in signal quality. The highly flexible system that results from evolutionary fiber deployment allows cable systems to deliver significantly more channels, improve system reliability, and reduce operating costs.

Time Warner, which in 1988 introduced "fiber backbone," has begun deploying a new architecture called "fiber trunk and feeder" (FTF). The FTF design takes fiber all the way into the feeder plant, which is the last stage before the actual connection to the home.¹⁷ This minimizes the use of coaxial cable to one mile or less and eliminates the use of all but two or three amplifiers in series. Time Warner is deploying this architecture in Queens and the Bronx to provide subscribers with 150 channels of interactive video. In the rebuild of its system in Marion, Indiana, Time Warner estimates that using the FTF design to replace 83 miles of coaxial cable with 61 miles of fiber will serve the same number of customers at a 20 percent cost savings. Further, this design will break the system into individual service areas of 150–200 customers, which will allow the system to provide specific programming to neighborhoods or other small clusters of customers.

In a similar vein, Viacom is upgrading its Castro Valley, California, system to "full impulse, two-way active" capabilities. This will allow Viacom to offer a variety of video-on-demand and interactive programming services. The system will utilize fiber-to-the-feeder technology, and will allow for the testing of innovative telecommunications services such as Personal Communications Services (PCS). Comcast—in conjunction with cable supply company Jerrold Communications—will utilize fiber-to-the-feeder technology and new digital compression techniques to offer a new service called Cable-on-Demand, which allows customers a wide choice of programs plus advanced features such as pausing a movie.

The FTF design is the latest in a series of logical, cost-effective steps which the cable industry has taken to deploy the technology of optical fiber. Fiber backbone, Cable Area Network, and FTF applications are considered evolutionary because placing fiber in this portion of the network not only makes technical and economic sense today, but also sets the stage for future developments in cable technology. Fiber is viewed not as an end in itself, but as a complement to already sophisticated cable systems which will improve their performance and enable operators to deliver a wider variety of programming and services. If and when fiber-to-the-home—which is prohibitively expensive today—makes economic sense, cable systems will be positioned to install it efficiently.

Cable systems of the future

The cable industry's research and development consortium, Cable Labs, currently envisions that future cable systems will be hybrid fiber/coax systems. This design melds the evolutionary fiber trunking applications, as they are being implemented

¹⁷It is interesting to note that this design brings fiber as close to the home as the telephone industry's much touted "fiber to the curb." Despite the telcos' rhetoric, they get no closer to the home with fiber than the cable industry. In fact, according to newspaper reports, several of the regional Bell Operating companies have abandoned the goal of fiber-to-the-home in favor of more realistic plans.

today, with coaxial cable in the drop to the home. Cable Labs' vision anticipates that additional service capabilities will be developed under this design through interconnection with other communications technologies and services, as is the case with the TCI/AT&T/US West joint venture to provide video-on-demand in Denver.

In the future, cable will both increase its reach and expand the capabilities of its infrastructure. Industry plans call for spending \$18 billion over the next ten years to upgrade plant and equipment, and over 60 percent of existing systems will be overhauled. Optical fiber will be an integral part of this upgrading, and will soon account for one-third of the industry's total annual investment in trunk and feeder cable.

Through the continued development and application of fiber optics, HDTV, customer addressability, and interactive services, the cable industry is at the forefront of communications technologies and is ready to offer the video network of the future—today.

3. *Telcos' Use of Fiber*

Why are the local telephone companies in such a rush to install fiber optics to the home? Not surprisingly, their motivation is economic: among other things, the telcos are searching for methods to reduce the nominal amounts they are earning from telephone rates today, and to justify rate increases in the future.

a. *Telco overearnings*

Telephone companies have traditionally been subject to rate-of-return regulation; that is, their rates are set to cover their annual operating expenses, plus capital investments, plus a specific rate of return on those investments. (This occurs under traditional rate-of-return regulation as well as under price caps and other called "incentive regulation" plans, which require regulators to periodically review the underlying costs of providing telephone service.) Rates of return between 12 and 15 percent have been typical in recent years.

Today, however, the cost of providing local telephone service is declining. Because telephone rates in most areas were established years ago, when costs were higher, many telephone companies are now earning higher profits than their regulators intended.

These declining costs are evidenced by the rate decreases that have been ordered by state regulators over the past few years. Indeed, according to the Federal Communications Commission, utility commissions around the country have ordered telephone rate reductions of more than \$3.3 billion over the last five years.

Rather than reduce rates for telephone consumers, telcos would prefer to inflate their expenses, and thereby justify expanded income. The two most convenient methods for achieving those higher expenses are through the use of accelerated depreciation and higher capital outlays. Accelerated depreciation allows a telco to achieve multiple goals: the higher book expenses cause the telco's profits to appear lower and the telco recovers its invested capital more quickly than originally planned.

In fact, telcos have been requesting accelerated depreciation at record levels, and in many states, their requests are being granted. Many consumers are unaware that the telcos are using depreciation for these purposes, simply because it does not show up in immediate rate increases; rather, consumers are denied rate decreases that they might otherwise be due.

b. *Future increases in telephone rates*

Telephone companies have an incentive to maximize their total investments for two reasons. First, it shelters their "excess cash" by giving the telcos an inflated rate base, thus allowing them to avoid potential rate reductions. Second, it provides a guarantee that telco rates will increase in the future. Because rate-of-return regulation is based upon the telcos' expenses and investments, higher investments mean higher rates in the future. The recent adoption of price cap and other forms of incentive regulation does little to change this. The differences from traditional rate-of-return regulation are more formal than real. The important point is that price regulation still remains centrally concerned with the telcos' profitability.

Clearly, the telcos' easiest opportunity to make huge new capital investments is in the uneconomical deployment of fiber optics. By advocating fiber-to-the-home, telcos are suggesting that telephone ratepayers should bear the cost of new capital investments that equal, by some estimates, three times the value of the entire U.S. telephone network.

But herein lies the problem. This extremely expensive new network would provide telephone users no new voice or data services beyond those they already can receive over the existing copper telephone network. What fiber can provide—and what the

telephone companies are forbidden from providing—is video programming, which is already widely available from a number of other sources.

Consequently, in order to justify the enormous expense of installing fiber optics to the home, telcos must manufacture an artificial “demand” for that technology. They must persuade government regulatory officials, not consumers, that this need exists. The telcos are attempting to create the demand by proposing to become content providers of video services, and by suggesting that fiber will transmit unidentified “new” services to consumers.

This economic imperative—the telcos’ need to prematurely replace their networks in order to prevent telephone rates from declining—explains many of their myths about fiber optics.

C. Pro-telco industrial policy is warranted

1. S. 1200 has harmful consequences

To meet the “competitiveness” threat, S. 1200 helps the telephone companies to meet their goals by proposing that the United States adopt an industrial policy which declares telcos to be our nation’s primary provider of all telecommunications services. Shunted aside under this industrial policy—in addition to new transmission system companies—are satellite carriers, cable companies, broadcasters, cellular systems, and radio operators.

There is no justification for anointing phone companies the main architect of our nation’s future communications infrastructure. Indeed, by centralizing all of our communications in one industrial network, we would invite unintended risks: a single system is more vulnerable to sabotage or terrorist attack (concerns raised during the Gulf War) or accident (as occurred with the software failure that shut down AT&T’s long distance network in January 1990 or the power failure that knocked out AT&T’s switch in New York City last year, shutting down several metropolitan airports in the process).

Indeed, the collapse of local telephone service in the Washington D.C. area on June 26, 1991, is a prime example of the problems that can arise from over-dependence on a single provider’s network and technology. In that situation, C&P’s computer switching system in Baltimore (one of four for the region) failed, creating a chain reaction—which was not supposed to happen—that knocked out almost all telephone service in a three state region for 12 hours. Similar problems due to the same faulty software occurred in Philadelphia, Pittsburgh, and in parts of Pacific Teleis’s service area on the West Coast.

2. S. 1200 fails to promote multiple uses of communications technologies

Title II of the bill¹⁸ claims to set as national policy goals the promotion of multiple uses of communications technologies and the elimination of monopoly providers. The FCC is directed to conduct—either upon request or on its own—proceedings to implement this policy. As part of these proceedings, the FCC is directed to waive or modify any regulatory obstruction to multiple uses of communications technologies, unless it finds, by a preponderance of the evidence, that a waiver or modification would be inconsistent with the public interest.

However, S. 1200 does not preempt state regulatory impediments to cable entry into the telephone business. In fact, the legislation expressly leaves unchanged the current between federal and state regulatory authorities with respect to multiple uses of communications technologies. Since telephone company monopolies are granted by the states, this bill does nothing to allow cable companies into the phone business or to promote multiple uses of the broadband fiber infrastructure which cable companies are installing around the country.¹⁹

3. Certain legal implications of S. 1200 are troubling

Even when taken on its own terms, S. 1200 raises substantial questions and concerns. The “broadband communications system implementation plans” called for in the bill, for instance, are not subject to public review or comment at the federal level

¹⁸ Title I of S. 1200 establishes a new national mandate: it amends the Communications Act of 1934 to require the Federal Communications Commission to make decisions “for the purpose of establishing a nationwide, advanced, interactive, interoperable, broadband communications system available to all people, businesses, services, organizations, and households on or before the year 2015.” Although described in futuristic terms, this may well establish a new and unpredictable legal test for all decisions reached by the FCC.

¹⁹ For example, GTE has gone to court to overturn a Washington Utilities and Transportation Commission decision which allows “alternative access provider Electric Lightwave to offer interexchange access * * * GTE is challenging the Commission’s decision on the grounds that it “violates GTE-NW’s right to be the exclusive provider of such services” (Communications Daily, January 14, 1992: p. 6).

despite the stated importance of these plans and the substantial cost of constructing the "advanced networks of the future." Moreover, these plans will apparently go into effect even if the appropriate state commissions disapprove them. In other words, the bill gives the national government the final say over the expenditure of hundreds of billions of dollars of ratepayer funds for local facilities—without input from ratepayers and without the involvement of state commissions directly responsible for regulating local telecommunications.²⁰

The provisions of the bill delineating the telcos' participation in video programming—characterized as a limited modification of the current crossownership policy—raise still other concerns. By creating several confusing, overlapping categories (video programming, affiliated video programming, video gateways, video transmission services), the bill raises at least as many questions as answers about the timing and conditions of telco entry into the video business. For example, could a telephone company distribute programming in which it held no ownership interest and thereby avoid the separate subsidiary requirement applicable only in the case of "affiliated" video programming? In its capacity as a provider of "video gateway" services, could a telephone company engage in the packaging and billing functions of a non-vertically integrated cable operator without using a separate subsidiary? Must video programming and video gateway capacity be tariffed, or could carriers offer special discounts under contract to lure particular customers? If those discounts were set below cost, who would make up the difference?

There are also questions about the status of the Modification of Final Judgment under this bill. For example, much is made of section 661, which defers to prohibitions upon local exchange carriers under the antitrust laws. In at least one instance, however, the bill expressly overturns "any * * * order * * * entered prior to the date of enactment" (section 653(b)); elsewhere section 11(c)(1)(A) directs the FCC to "waive or modify any regulatory or other obstruction" to the "multiple uses of communications technologies" (emphasis added). At best, such open-ended provisions invite years of litigation that could end with a decision that Congress has given the FCC the tools to modify the antitrust decree.

IV. PROPOSED "SAFEGUARDS" IN S. 1200 WILL NOT WORK

A. *The "safeguards" in S. 1200 will not protect ratepayers or competitors*

Title III of S. 1200 modifies the existing telco-cable crossownership prohibition, but allowing a telephone company to own or control video programming within its local service area if the FCC has completed its review of the telco's broadband network "implementation plan" and has certified that the telco has filed a plan committing the telco to full compliance with certain specified "safeguards." These new "safeguards" include:

- a 25 percent limitation on the channels that a telco could program with "affiliated video programming";
- the provision of video programming only through a separate subsidiary;
- a requirement that telcos distributing affiliated video programming comply with "franchise and franchise-related" obligations that franchising authorities deem appropriate;
- a ban on cross-subsidization;
- a prohibition on telco buy-outs of existing cable systems;
- mandated pole access for at least one other video program provider;
- a prohibition on cross-marketing of video and non-video services by telcos;
- penalties, including divestiture of the separate video programming subsidiary, for willful and knowing violations of the safeguards.

Unfortunately, S. 1200 is full of loopholes. For example:

1. *The "death penalty"*

The "death penalty" clause, requiring divestiture of a telco's video subsidiary if the telco is found to have engaged in a consistent pattern of willful and knowing violation of the safeguards, has been held up as the ultimate protection for consumers. Surely no telco would ever consider anticompetitive behavior, so the theory goes, if it could be forced to sell its video subsidiaries. In fact, this purported safeguard is greatly overstated because it would become operable only in the most extreme situations. Indeed, the unique standard of proof of a "consistent pattern of

²⁰ This concern is especially relevant following the FCC's decision on January 16, 1992, to preempt the Georgia Public Utilities Commission's efforts to suspend BellSouth's memory call service. The FCC—which wants to accelerate the LECs entry into information and video services—ruled that memory calling was an interstate service and took jurisdiction away from the State PUC in order to allow BellSouth to proceed (BellSouth Corp. Declaratory Ruling, FCC 92-18, released February 14, 1992).

willfully and knowingly violating" the safeguards is more demanding than that used in criminal proceedings—including criminal proceedings for violations of the Communications Act.

The "death penalty" is not an adequate safeguard because it requires proof of a consistent pattern of illegal behavior and specific intent to violate the law. Consumers are harmed by discrimination and cross-subsidization no matter what the intent. It should therefore be sufficient to find that a violation of the law has occurred in order for the FCC to impose sanctions, as is the case under current law. By imposing even greater obstacles to FCC enforcement, S. 1200 provides telcos with the defense that they did not know of the illegal activity, that they did not intend it, or that it was an aberration rather than a pattern—as NYNEX recently argued in defending against \$120 million in misallocated costs and overcharges.

In addition, the "death penalty" standard of proof ties the hands of the Commission, since it currently has the authority to order divestiture of telco affiliates in the public interest—including on a showing of a single violation.²¹ If S. 1200 were enacted, no matter how egregious the single violation, the Commission could not order divestiture even if it were in the public interest.

More significantly, the very high standard of proof in S. 1200 suggests that the "death penalty" is to be invoked only as a measure of last resort. This effectively discourages its use by the FCC, which historically has been very reluctant to exercise revocation powers. Meanwhile, vast amounts of damage could accrue without triggering regulatory relief.

Finally, this "safeguard" offers competitors little protection since they could be out of business by the time the telcos were caught and brought to justice. As a result, the "death penalty" fails to protect either consumers or competitors from telco abuses.

2. The "ban" on cross-subsidization

The hollowness of the safeguards in S. 1200 is also illustrated by the provision in section 652 which purports to bar cross-subsidization. A statement to the effect that "telcos shall not cross-subsidize" might at least have some symbolic value. But the bill does not even go that far. Instead, it instructs carriers to refrain from any practice that is barred by the FCC or a state public utility commission. Depending upon the specificity of the regulations, telcos may not be barred from engaging in some forms of cross-subsidization simply because they may not have been identified by regulatory authorities.

3. The 25 percent "limit" on video channels owned by telcos

Existing broadband facilities deployed by cable operators can deliver 150 channels of video; with digital compression, that number could reach 600. Only a few cable companies are vertically integrated, and the largest of these, TCI, has interests in fewer than a dozen of the 70 national cable networks; Time Warner, which is deploying the 150-channel system in Queens, New York, has interests in nine. Most cable systems provide multiple channels of television featuring cable networks, superstations, and local broadcasters, which are for the most part not owned by the local cable operator.

If telcos were allowed to provide television over their own plant, they could easily own dozens, if not hundreds, of their own channels under the 25 percent cap. As such, it is hardly any "cap" or "limit" at all. When dined with the problems of cross-subsidization and discriminatory use of the telcos' facilities, letting telcos program "only 25 percent" of their own video capacity could put other television distributors out of business instead of fostering competition or expanding consumer choice.

4. Pole attachments

Telephone companies will have strong incentives to discriminate against cable operators seeking pole attachments, and the bill does nothing to protect cable operators if telcos act on these incentives. For example, the bill requires only that telcos demonstrate that it makes "available to one or more unaffiliated cable operators, within the limits of technical feasibility, attachment rights. * * * This may give phone companies great latitude to deny pole attachments for "technical reasons" or on the grounds that they have already provided space to the incumbent cable operator; there is no guarantee that future video providers will be able to obtain attachment rights. Moreover, the mechanism in S. 1200 for an aggrieved cable operator to seek redress at the FCC is at best ambiguous.

²¹ See, e.g., *Comark Cable Fund III*, 100 FCC 2d 1244 (1985); *Lake Telephone*, 41 FCC 2d 335 (1973); *Fort Mill Telephone*, 25 FCC 2d 748 (1970).

5. Video gateways

The bill allows telcos to provide their own programming under the video gateway provision if no third party seeks to utilize the telcos' facilities. It will thus create incentives for the telcos to construct and price their facilities in such a way that deters use by third parties. This is a very serious issue and is at the core of the current controversy over the direction of the FCC's Open Network Architecture (ONA) policy. It also suggests that telephone ratepayers can be saddled with enormous payments flowing from poor performance by the telephone companies in the competitive video business: if no third parties use the telcos' new video facilities, it will be telephone ratepayers who bear the cost.

6. Inability to enforce safeguards

Part of the problem with regulatory safeguards is that regulators do not have the resources and ability to enforce them. As the General Accounting Office noted, the FCC does not have enough staff to properly audit the telcos.²² GAO concluded that "the FCC staff * * * is able to audit each relevant telco account only every sixteen years * * * The level of oversight [the] FCC is prepared to provide will not, in GAO's opinion, provide telephone ratepayers or competitors positive assurance that FCC cost allocation rules and procedures are properly controlling cross-subsidy."²³ Similarly, the Chairman of this Subcommittee, Senator Inouye, has expressed skepticism about the FCC's ability to police cross-subsidies. "The Commission's accounting standard for monitoring cross-subsidization is brand new," he told his colleagues, "and it is well recognized that the Commission does not have the resources to conduct frequent audits."²⁴ His fears are well-founded: Common Carrier Bureau Chief Richard Firestone recently stated that "telecommunications technology was changing so rapidly that regulations written in Washington were likely to be outdated by the time they were put into effect * * * Firestone pointed out that the bureau, with a \$23 million annual budget and a staff of 300, could not possibly police an industry with 1.3 million employees."²⁵ The House Subcommittee on Telecommunications and Finance heard similar concerns during its oversight hearing on FCC common carrier issues in June, 1991. The FCC recently imposed requirements strengthening the independent audit of telco cost-allocation practices, but that is still not an adequate substitute for government audit capability.²⁶

Regulators at the state and federal level have also expressed doubts about the effectiveness of safeguards. FCC Commissioner Andrew Barrett, who was a state regulator for eight years, has said, "[i]n my years of rate regulation, I've only seen maybe two states that could recognize a cross-subsidy if it was staring them in the face."²⁷ Similarly, FCC Chairman Alfred Sikes said in 1990, "I don't believe that career Government people, or for that matter career non-Government people, can find out what the true cost of a service should be."²⁸ Finally, FCC Commissioner Ervin Duggan said in 1990 that he has a "nightmare" about a "sixty-story building in Gaithersburg [MD] filled with FCC accountants that would be needed to monitor telco cross-subsidies if they were in the cable television business."²⁹

The very foundation of the FCC's accounting rules and open network architecture rules has been shaken by judicial review. A 1990 court decision found that the FCC was "arbitrary and capricious" when it decided in 1986 that separate subsidiary requirements were unnecessary and accounting rules and open network architecture requirements were enough to prevent cross-subsidy and other abuses.³⁰ The FCC has responded by resurrecting the ONA requirements and by reinstating non-structural safeguards with only some incremental modifications.³¹ But the most fundamental question of whether federal or regulators bear responsibility to counter anticompetitive actions by local telephone companies that have integrated into en-

²² General Accounting Office, *Telephone Communications: Controlling Cross-Subsidy Between Regulated and Competitive Services*, October 1987: p. 3.

²³ *Ibid.*, p. 11.

²⁴ Statement of Senator Daniel K. Inouye, Executive Session of the Committee on Commerce, Science, and Transportation to Consider S. 173, *Legislation to Lift the Manufacturing Restriction in the Modification of Final Judgment*, March 19, 1991: p. 2. Senator Inouye was likewise dubious about the ability of the FCC to enforce provisions of the proposed legislation designed to prevent "self-dealing" between an RBOC and its manufacturing affiliate: "There is no practical way for the Commission to monitor the many thousands, possibly millions, of transactions, to determine if the prices, terms, and conditions are non-discriminatory" (*Ibid.*: p. 3).

²⁵ BOC Week, October 7, 1991: p. 1.

²⁶ Computer III Remand, 6 FCC Rcd. 7571 (1991).

²⁷ *Communications Daily*, January 17, 1990: p. 4.

²⁸ *New York Times*, September 20, 1990: p. D2.

²⁹ *Communications Daily*, May 24, 1990: p. 1.

³⁰ *California v. FCC*, 905 F.2d 1217 (9th Circuit, 1990).

³¹ CC Docket No. 90-368 and CC Docket No. 90-623.

hanced and other transmission-dependent services remains obscure.³² Computing enhanced service providers, which were supposed to benefit from ONA, have stated that "user access to the network will be largely restricted to specific services developed and deployed by the BOCs"³³ under the new telco ONA plans. In other words, the ONA requirements will restrict rather than encourage competition. Furthermore, the FCC Common Carrier Bureau has determined that ONA tariffs filed by the telcos "may not produce reasonable" charges.³⁴

Existing safeguards have clearly not prevented anticompetitive behavior. Moreover, economists who have studied regulation for many years have concluded that no safeguards can ever be truly effective. Former FCC economist John Kwoka has said " * * * regulatory agencies face tasks that are daunting under the best of circumstances * * * They are generally overmatched by the companies they are charged with monitoring, and * * * the regulatory reforms of the past few years have not fundamentally altered this balance of power."³⁵ In the words of the Satellite Broadcasting and Communications Association (SBCA), "The FCC may need a mini-Pentagon to sort through and regulate the web of operations of these behemoths."³⁶ The absence of effective regulatory oversight means there is no "binding constraint" on the telephone companies' incentive and ability to harm competition.

B. The record is clear: "Safeguards" do not prevent anticompetitive behavior

Local telephone companies have a long history of using their legal monopolies to forestall competitors and would-be competitors alike; this history continued even after divestiture in 1984. Wherever possible, the telcos have also forced upon their customers the costs of various ventures that provide little or no benefit to the consumer. Cross-subsidization, misallocation of costs, and predatory pricing are already against the law, but the telcos' behavior over the years has demonstrated that existing regulatory safeguards do not prevent anticompetitive behavior—and that lifting current restrictions on local telephone companies based on the promise of additional safeguards will pose substantial risks for consumers and competitors alike. In the words of FCC Commissioner Sherrie Marshall, "our experience with the telephone industry doesn't give us much confidence we could control cross-subsidies."³⁷

1. Misallocation of costs

Rate base regulation gives regulated firms the incentive to misallocate costs and discriminate in the provision of service to others. The basis for this incentive is found in the telephone rate regulatory formula which has prevailed for decades. A simple rendering is $R = E + (V - d)r$ (where R = revenue requirement, or allowable earnings; E = expenses; V = gross facilities investment; d = depreciation; and r = allowed rate of return, or cost of capital.)³⁸

Regulation prevents local telephone companies from fully exploiting the economic value of their monopolies by limiting their profits. When it is effective, the very nature of traditional public utility regulation prevents them from earning monopoly profits in the local market where they have power. As a result, their rational economic incentive to evade these constraints, to fully recognize the value of their monopolies, leads to efforts to exploit their power in other markets. story evasion creates a constant and systematic bias toward diversification into adjacent markets and a constant danger of unfair competition in these markets. Put simply, local exchange companies have every incentive to leverage their governmentally sanctioned monopolies—monopolies which they have strenuously sought to protect through legal barriers—into competitive markets. Competitors who depend upon telephone monopoly facilities and services in order to provide their own services are most especially vulnerable to this leveraging. Electronic publishers, and cable operators specifically, are classic examples of firms which are dependent upon telephone company "essential facilities."

Cost-of-service regulation thus induces the regulated monopolist to maximize its profits in an unusual way. The monopoly local exchange provider has an increased

³² BellSouth Corp. Declaratory Ruling, (FCC 92-18, rel. Feb. 14, 1991).

³³ Comments of Coalition of Open Network Architecture Parties, FCC Docket No. 90-623.

³⁴ Telecommunications Reports, February 10, 1992: p. 33.

³⁵ Memorandum of National Cable Television Association in *U.S. v. Western Electric Co.*, at 35.

³⁶ Comments of the SBCA, FCC Docket 87-226, February 3, 1991: p. 11.

³⁷ Charles Mason, "Regulators slam telcos over CATV," *Telephony*, April 1, 1991: p. 10.

³⁸ As noted earlier, this occurs under traditional rate-of-return regulation as well as under price caps and other so-called "incentive regulation" plans. Price cap plans, such as those recently implemented by the FCC, require regulators to periodically review underlying costs in the provision of phone service, thus preserving the incentive for misallocating expenses and expanding the regulated cost base.

incentive to integrate into unregulated markets through which it can realize otherwise impermissible profits. If allowed into competitive markets, the monopolist can maximize its overall profits by (1) misallocating costs attributable to the competitive business to the regulated services, thus increasing the rate base; (2) manipulating intracorporate transfer prices; and (3) discriminating against its competitors, thereby raising their costs or foreclosing them altogether.

Recent news reports have highlighted these incentives to misallocate costs. For example, between 1984 and 1988, NYNEX illegally subsidized a subsidiary—Materiel Enterprises Company (MECO)—with \$118 million in ratepayer money (principally through improper transfer prices). Under pressure from the FCC, NYNEX settled for a \$1.4 million payment in lieu of a fine. The FCC also ordered NYNEX to make \$68 million in additional rate reductions. An audit of BellSouth in 1990 revealed that its unregulated directory publishing subsidiary received \$240 million in revenues that should have been credited to the regulated phone companies. Moreover, in recent years, BellSouth, Southwestern Bell, and NYNEX were guilty of improperly allocating lobbying costs to ratepayers. Such behavior confirms an analysis published by the National Association of State Utility Commissioners (NARUC) in 1986, which found that “[t]he operations and methods of Pacific Telesis bring to life the worst nightmares of regulators. There appears to be no advantage to the holding company structure except to the unregulated businesses of Pacific Telesis, which are cross-subsidized at every turn by Pacific Bell [the regulated telephone subsidiary of Pacific Telesis].”³⁹ The unregulated businesses that benefited from cross-subsidy included real estate, business communications services, and the PacTel International subsidiary. The report also concluded: “It appears that Pacific Telesis is testing the waters to determine just how far it can go in sidestepping all regulatory rules and concerns.”⁴⁰

Cross-subsidization and misallocation of costs are not limited to the Bell Operating Companies. GTE as well as several RBOCs were found by the FCC in 1989 to be improperly allocating the costs of providing inside wire maintenance (a competitive, unregulated business) to regulated activities. As a result, the FCC disallowed the inclusion of these costs (\$158 million) in the local telephone rate base. Similarly, the FCC has proposed fining a CTE/Contel subsidiary after finding that Contel’s purchasing subsidiary apparently overcharged its regulated phone companies. The telephone companies appear to have paid the purchasing subsidiary \$1.4 million “above and beyond the fair cost of goods and services provided to them,” and those charges were passed on to ratepayers.

Apparently aware of these problems, the authors of S. 1200 sought in section 652 to prohibit any practice by a telephone company “which is prohibited by the Commission * * * in order to prevent the subsidization of * * * [an] affiliated video program subsidiary.” This is an unusual requirement—apparently simply mandating that telcos obey FCC and state public service commission rules—something they already are under legal compulsion to do. Unfortunately—and as an illustration of the problem of creating effective safeguards—S. 1200 gives the FCC and state commissions little guidance as to what these cross-subsidy rules might be.

The apparently very narrow scope of S. 1200’s cross-subsidy concerns also raises serious questions. Section 658 requires protection for the ratepayer only for the costs of a telco’s video programming. Section 11, dealing with “multiple uses of technology,” appears merely to restate authority found in the present Section 201 of the Communications Act—namely the requirement that rates be just and reasonable. The result is that the enormous costs of the broadband facilities may be left to the generosity of the telephone ratepayer, even where the telco has failed miserably in the broadband marketplace. It is a familiar telephone company formula: the benefits go to the shareholders; the costs and risks fall on the ratepayer.

Regardless of how carefully additional rules might be crafted, a strong, systematic, and persistent incentive for cross-subsidization would still be present. This incentive is unlikely to be thwarted by even the most rigorous cost allocation rules. The evidence adduced in the AT&T case, for example, documented the failed attempts by the FCC to deal with the cross-subsidy problem. According to the district court, the FCC was unable “to penetrate and evaluate the Bell System’s accounting system and its costs and pricing strategies * * *.”⁴¹ The district court had earlier

³⁹ NARUC, Summary Report on the Regional Holding Company Investigations, September 18, 1986: p. 17.

⁴⁰ In January 1992, the RBOCs declined NARUC’s request for an audit of transactions between telephone companies and their unregulated affiliates (Communications Daily, January 27, 1992: p. 6; January 28, 1992: p. 4).

⁴¹ *United States v. Western Electric Co.*, 673 F. Supp. 525, 530 (D.D.C. 1987), *rev’d on other grounds*, 900 F.2d 283 (D.C. Cir.), *cert. denied*, 59 U.S.L.W. 3277 (1990).

concluded, based on testimony by former FCC officials, that "the Commission is not and never has been capable of effective enforcement of the laws governing [the Bell System's] behavior."⁴²

2 Discrimination in access to facilities

The local exchange companies' ability as well as the incentive to discriminate still exists. For example, the telco can deny an independent competitor access to the wires, provide inferior service, or force the competitor to spend more time and money achieving equivalent access, thereby giving the telephone company a competitive price advantage.

Discrimination is expensive. Rate-of-return regulation makes it less so for telephone companies, and therefore more likely to occur. The video business is susceptible to discrimination, and video programming services are vulnerable to small degradations in transmission quality. Price manipulation, use of "inside" network planning information, and knowledge of competitors' customer usage patterns could all be employed by the telcos to discriminate should they find themselves offering video transmission services to video programming customers with which they also compete.

The FCC has sought over the last several years to address the discrimination problem generally. Its most recent attempts to deal with the problem—the comparably Efficient Interconnection (CEI) and Open Network Architecture requirements of Computer III—have been discredited and criticized by nearly every relevant party, except, of course, the telephone industry itself.

Dr. Huber, the consultant to the Department of Justice in the Triennial Review of the Modification of Final Judgment observed:

Regulation of this form certainly takes care of the first-order concerns about cross-subsidy through underpricing of basic services. It does not, however, fully resolve concerns about a [BOC's] ability to manipulate tariff mixes, adjust the timing of the introduction of new tariffs, and so on.⁴³

The Department of Justice also has concluded that it is "unclear just what the impacts of ONA on the potential for discrimination will be and how those effects will vary from market to market." In fact, the Department acknowledged that controls stronger than ONA were in effect before the AT&T consent decree and that these controls were "ineffective."⁴⁴

There are several recent examples of telco discrimination against its competitors. For instance, in 1991, US West admitted to discriminatory behavior and violating the MFJ in its dealings with the GSA by offering the U.S. Government access to its local network at prices below its published interstate tariff if GSA would also buy its switching services from US West rather than AT&T. US West agreed to pay a record \$10 million civil fine in conjunction with this violation and several other admitted and alleged violations of the MFJ which the U.S. Department of Justice identified. Similarly, in 1990, a jury found that Southwestern Bell was guilty of charging directory publishing competitors higher prices for customer lists than Southwestern Bell charged its own subsidiaries. As Judge Greene noted in his triennial review of the MFJ: " * * * in any market where the Regional Companies are in competition with independent information service providers, their economic interest lies in manipulating the system toward use of their own services, rather than in encouraging maximum use of the network by their information service competitors."⁴⁵

Perhaps in recognition of these enormous difficulties, S. 1200 imposes a separate subsidiary requirement on a telco's provision of "affiliated" programming. The separation requirements, however, depart in significant respects from those that have been identified as holding out the best hope of facilitating the detection of discriminatory tactics. By way of example, the traditional separate subsidiary model would also include a prohibition on the provision of transmission services except pursuant to generally-available tariffs, a ban on common officers, directors and employees, and perhaps some outside ownership of the separate subsidiary. Further, the bill affords a basis for waiver of the separation requirements under certain conditions—conditions that are readily susceptible to telco manipulation.

3. Improper activities and anti-consumer behavior: NYNEX—a case study

Telephone companies are in a position to use their immense economic power, complex organizational structure, and primary contacts with customers to engage in a

⁴² *United States v. AT&T*, 552 F. Supp. 131, 168, 170 (D.D.C. 1982).

⁴³ Huber, *The Geodesic Network*, section 6.35.

⁴⁴ *United States v. Western Electric Co.*, 673 F. Supp. at 576.

⁴⁵ *United States v. Western Electric Co.*, 673 F.2d at 565-566.

broad range of improper behavior. For example, in the last two years, NYNEX has illustrated a wide range of anticompetitive and anticonsumer behavior. NYNEX is not unique in the types of misbehavior in which it has engaged, but it does represent the widest range of such activities by any one telephone company:

a. Violation of the MFJ

NYNEX was indicted for violating the MFJ by engaging in the information services business—a line of business it agreed to stay out of as part of the settlement of the AT&T antitrust case. A federal grand jury returned an indictment against NYNEX in this case in June 1990, and the Department of Justice is seeking a \$1 million fine against the company. A NYNEX official has admitted the violations in a letter to the Justice department. In a related case, a former employee of NYNEX has alleged that he was fired by NYNEX when he brought these violations to the company's attention.

b. Illegal cross-subsidization

NYNEX cross-subsidized a subsidiary—Materiel Enterprises Company (MECO)—with \$118 million in ratepayer money. MECO sold services to its sister NYNEX companies at inflated costs, and the telephone subsidiaries passed on these inflated costs to their ratepayers. Under pressure from regulators, the company has agreed to refund \$50 million in overcharges to its telephone subsidiaries. The FCC investigated the case and settled with NYNEX for \$1.4 million after an audit, and also ordered \$68 million in rate reductions.

New York Attorney General Robert Abrams has noted that NYNEX officials have “resisted us every inch of the way” as his office tried to gather information about the case. The Attorney General, as well as the New York State Consumer Protection Board, have argued that the payment of \$1.4 million was insufficient and that new information continues to be uncovered; both have petitioned for a Court of Appeals review of the FCC's action in this case. Competitor Allnet Communications called the FCC settlement and fine a “secretly negotiated agreement” which underscores the inadequacies of the FCC's investigative abilities and policing powers. However, the FCC denied petitions to reconsider its actions in this case.

NYNEX responded initially by merging MECO into another subsidiary. However, the New York Department of Public Service (NYDPS)—in order to prevent the further abuses—ordered a restructuring of the company to virtually eliminate non-tariffed transactions between NYNEX's telephone operations and its nontelephone affiliates.

c. “Perverts Conventions”

One well publicized situation at NYNEX involved a series of gatherings of NYNEX employees and suppliers known as “Perverts Conventions.” These were improper, if not illegal, contacts between NYNEX officials and about thirty supply companies, some of whom picked up the tab for festivities which apparently included “arranging for women.” At least one study has shown that suppliers who attended the conventions were significantly more likely to get increased business from NYNEX than those who did not attend.

d. Rate case

In 1988, NYNEX sought and obtained the NYDPS's permission to be freed from rate-of-return regulation in exchange for freezing its rates—a so-called “social contract.” Only a year later, NYNEX decided that the arrangement was not as profitable as it had hoped and that it needed additional revenue from a \$1 billion rate increase, which would have doubled existing residential phone rates. Essentially, the company was asking for permission to rewrite the social contract. In December 1990, the NYDPS rejected the requested rate increase of \$832 million and instead approved \$250 million.

e. Bribery investigation

In the latest revelation, as part of ongoing internal investigations of kickbacks, bribes, and other wrongdoing, New York Telephone disclosed last year that 28 employees have resigned or been fired as a result of these investigations. The New York Department of Public Service, the New York Consumer Protection Board, the Connecticut Department of Public Utilities, and the New York Attorney General's office are all still investigating the full extent of NYNEX's illegal and unethical actions.

4. Conclusion

The telephone companies often argue that the abuses cited in this section and Appendix B are aberrations, and that their disclosure is evidence that the current sys-

tem of safeguards is adequate to uncover the "occasional" instance of anticonsumer or anticompetitive behavior. To the contrary, one of the most far-reaching cases of telephone company misconduct (NYNEX) came to the attention of regulators only after an investigative newspaper story brought the abuses to light. Even where regulators have identified illegal practices, investigating those practices and obtaining sanctions against a telephone company require an extraordinary expenditure of time and money by government agencies—which have neither to spare.

The fact is that telco abuses of consumers and competitors alike are occurring within the context of existing safeguards and line-of-business restrictions. There are very strong and compelling reasons for the current line-of-business restrictions imposed on the telcos, and these reasons are as valid today as when they were first imposed. Indeed, the SBCA recently told the FCC: "The SBCA does not favor the entry of the LECs into the business of television delivery and does not countenance their participation in television program content."⁴⁶ Similarly, the National Association of Broadcasters (NAB) stated in the same proceeding: "NAB opposes LEC entry into all forms of information services content, and urges the Commission to make no recommendation to Congress to change the statutory ban."⁴⁷ The fact is that there are no new rules or regulatory regimes that could safeguard ratepayers or competitors if the telephone companies are allowed into television or other information services. [See Appendix B for further examples of telco abuses under existing law.]

V. WHAT S. 1200 REALLY IS ABOUT: TELCO-TV

A. *The problem with telco-TV*

The telephone industry has mounted an aggressive lobbying effort to convince Congress to overturn federal restrictions which prevent local telephone companies from entering the cable television programming business.

Yet under current law, telephone companies can—and already do—have significant involvement in the cable television business. For example:

- Independent telcos like GTE-Contel and Sugar Land can own and operate cable systems outside their local telephone service areas. So can the Bell Operating Companies, as a result of the court's reversal of the MFJ's information services restriction.
- All telcos can build video transport facilities and lease them to locally franchised cablees, as Bell Atlantic's C&P Telephone Company has done in Washington, D.C.

- Current law also allows the country's rural telephone companies to provide cable television within their local telephone service areas.

What federal law does prohibit is the provision of video programming by telcos in non-rural areas where they also provide local telephone service.

The current pro-competitive restrictions on telco involvement in television have ensured that consumers around the country enjoy a wide range of entertainment and information from a diverse number of sources. During the last decade alone, the number of broadcast stations grew by 43.4 percent from 1,038 stations on the air in 1981 to 1,489 in 1991. Home VCRs, a novelty at the beginning of the 1980s, were in 78 percent of all U.S. television households by the end of 1991.

Similarly, cable television, which reached barely 20 percent of American television homes in 1980, served more than 60 percent of all U.S. households in 1991. The number of satellite-delivered cable programming networks grew by 100 percent, from 38 in 1981 to 76 in 1991. Dozens of regional cable networks were also launched during the 1980s. Indeed, the General Accounting Office (GAO) reported that in 1991, the average American cable household received 35+ channels of basic video programming for \$18.84 per month—only 53 cents per channel.

Despite this growth in the choices available to television consumers, the telephone companies argue that they must be permitted to enter the television business to provide "competition." However, both Congress and the courts recognize that telephone companies, which exercise monopoly control over an essential service, have unite abilities and incentives to discriminate against competitors at the of telephone ratepayers and competitive businesses. As described earlier, the telephone industry has a long history of anticompetitive conduct, which is why the ban on telco entry into video programming currently exists.

Although the telcos tout the benefits of "competition," they also make clear their intent to create a "one-wire" world, with telephone companies owning and controlling the only source of information and entertainment into and out of the home. In-

⁴⁶ Comments of the SBCA, CC Docket No. 87-266, February 3, 1992: p. 12.

⁴⁷ Comments of the NAB, CC Docket No. 87-266, February 3, 1992: p. 3.

deed, BellSouth and other major phone companies seek to be "the first guy to the home with fiber," while at the same time urging Congress to eliminate safeguards which prevent phone companies from controlling the content transmitted over that single wire.⁴⁸

The telcos' attitude toward competition was clearly revealed in a recent franchise referendum in Tulsa, Oklahoma. In November 1991, the city approved a new 20-year franchise with United Artists Cable which called for construction of a new fiber-optic cable facility; such decisions, which are embodied in city ordinances, must be ratified by the public. southwestern Bell, fearing competition from the cable industry, launched a publicity campaign to defeat the initiative at the polls—which it is doing. As a result, Southwestern Bell has denied the city of Tulsa and its citizens greater channel capacity, clearer signals, improved reliability, a greater number of public, educational, and governmental access channels, and two-way interactive capabilities. [See Appendix C for a complete discussion of the problems that would stem from the creation of a telco-dominated infrastructure in the United States.]

B. Telephone company myths about fiber and information age services

To further justify their efforts to enter the television business, the telcos also have advanced a number of myths about the potential of fiber optics technology. If the restrictions on telco involvement in content are lifted, the telcos maintain, then they would be able to accelerate the installation of "fiber-to-the-home" transmission systems capable of bringing wondrous new services to consumers. Increasingly, however, the telcos' "blue sky" rhetoric is at odds with technical and economic reality.

1. Telco Myth 1: The cable/telco crossownership restriction prevents telephone companies from offering new "Information Age" services

Not true.—With the sole exception of television programming, every service that telcos claim they could provide if only the law were changed is either already available today or could be provided over the telcos' existing copper wire telephone systems. As a Rand Study concluded: "Almost all imaginable information services to the home can be supplied by today's telephone and cable TV systems."⁴⁹ For example, services such as bank-at-home, shop-at-home, remote database access, home security monitoring, at-home workstations, educational and medical services already are available—if little used—over the copper wire-based switched system the telcos have in place.

The fact that these "new" services are not widely prevalent is more attributable to a lack of consumer demand and the telcos reluctance to offer them on a universal basis than the technological limitations of the existing telephone network. Indeed, US West recently admitted to the FCC:

One of the issues which arises whenever infrastructure issues are discussed—is the question of deployment. Will new advanced communication networks be deployed throughout a LEC's service area or will they be deployed in high-volume markets and along high-traffic corridors? This is the point where economics and social goals often collide. Telephone companies and other providers have no incentive to introduce new services in areas where demand is minimal. Likewise, telephone companies have no incentive to price their products at average prices when costs vary significantly between areas. Regulators and legislators often have diametrically opposing views from those of service providers—favoring universal deployment and broad averaging for prices.

The Commission should allow LECs to introduce new video services, including video dialtone, in those areas where it makes good economic sense to do so. To require those LECs introducing new video services to do so throughout their service area would neither serve the Commission's competitive goals nor economic efficiency.

⁴⁸ Some have suggested that the bill promotes cable's entry into telephony, as well as allowing telcos into cable, by pointing to the finding which states that:

"Among the governmental actions which may be necessary to promote such an environment and provide an effective incentive to complete a nationwide, advanced, interactive, broadband communication system is the modification of current restrictions on (a) the provision of video programming by local exchange carriers; and (b) if regulatory parity exists between cable television systems and local exchange carriers, the provision of telecommunications and other services by cable television companies [Section 301(a)(4)]."

However, this is only a finding, not legislative language. In fact, the bill only lets telephone companies into the cable business, not vice versa.

⁴⁹ Leland L. Johnson and David P. Reed, June 1990: Residential Broadband Services by Telephone Companies? Technology, Economics, and Public Policy. RAND Corporation: Santa Monica, CA: p. 5.

Similarly, LECs should be allowed the freedom to develop prices for video dialtone which reflect traffic density. LECs should not be required to develop broadly averaged prices which bear little or no relation to the cost of providing service in a given area. The inherent economies of scale in fiber optic equipment and cable result in lower unit costs for more dense (i.e., higher volume) routes and higher costs for less dense routes. The net result is that LECs will be able to provide video services at significantly lower costs in highly urbanized areas with high traffic density than in less populous urban and rural areas.⁵⁰

2. Telco Myth #2: The current restrictions prohibiting telcos from providing television content discourage them from installing fiber optics.

Not true.—The crossownership restrictions prohibit telco involvement in content, not in building transmission facilities. In fact, telephone companies are already installing fiber optic technology where it is practical—in trunking and feeder lines that reach into neighborhoods.

The pace of fiber deployment by the telcos is a function of immense cost and logistical/technical difficulties, not the existing ban on telco-provided content. As the telcos themselves have discovered, the costs and technical hurdles are when fiber is installed all the way to the home. At a 1990 fiber optics seminar, five of the seven RBOCs reported that, based on field trials, fiber-to-the-home is neither technically nor economically feasible at this point.⁵¹

It is significant, too, that the telcos have opted not to use fiber-to-the-home in their foreign cable television systems. Rather, they are employing traditional coaxial cable systems or newer configurations using fiber in the trunk and coaxial cable to the home. This fiber/coax hybrid architecture is the state-of-the-art choice of cable systems in the United States when building or upgrading their facilities.

3. Telco Myth #3: If the existing restrictions were removed, the telcos would begin to "fiber" rural America

Not true.—Telco executives claim that fiber-to-the-curb will become economically justifiable in the mid-1990s in new-build areas. However, telephone companies have revealed in their recent experiments with fiber optics in the local loop that their agenda is not to bring fiber to all citizens in the form of universal service. Rather, they are more interested in providing fiber to upscale communities.

The telcos have acknowledged that it is too expensive to bring fiber to the home, and they are now experimenting with fiber to the curb. Even at that, they are principally installing such technology in upscale and luxury housing developments. For example, BellSouth, in describing a fiber trial in Heathrow, Florida, said: "The advantage of a place like Heathrow is that it is a community with much more disposable income than the average community. These people have the ability to pay more."⁵²

Because of the prohibitive costs of fiber-to-the-home, it is likely that the telcos would only wire rural America with fiber long after urban and suburban areas. This pattern would be wholly consistent with how telcos have deployed other telecommunications technologies.

For example, features such as touch-tone dialing, call waiting and call forwarding—standard services in urban and suburban areas—are still unavailable to many rural Americans.⁵³ Moreover, although telcos are allowed to build cable systems in truly rural areas, telco executives admit that stand-alone cable systems are not economically feasible in these communities. Yet telephone company officials suggest that rural America—some areas of which still must rely on rotary dialing and party lines—would soon be wired with expensive fiber optics transmission technology, were it not for the restrictions prohibiting the telcos from controlling television content. As telco witnesses told the House Government Operations Committee on February 7, 1990, telephone companies will install fiber where economically feasible regardless of whether they get into video or not. Conversely, they stated that

⁵⁰ US West Comments, CC Docket No. 87-266, February 3, 1992: pp. 24-25.

⁵¹ "RBOCs Say Fiber-to-Home Not Feasible," Multi-Channel News, January 29, 1990: p. 30.

⁵² Guidelines, volume 4, number 3, 1988: p. 6.

⁵³ A recent NTIA study reported that less than one percent of access lines in the U.S. have access to narrowband Integrated Services Digital Network, or ISDN, an advanced digital service that telephone companies are allowed to provide under current law. There is apparently no great haste on the part of the telcos to deploy universally the state of the art technology of which they are currently capable (NTIA, The NTIA Infrastructure Report, October 1991: p. 102).

there are rural areas where they will probably never deploy fiber even if they are allowed into video programming.

4. Telco Myth #4: High-Definition Television (HDTV) will not be available to consumers unless the telcos wire the nation with fiber

Not true.—Contrary to some claims, optical fiber is not necessary for the transmission of HDTV. However, as cable companies enhance their systems with fiber, they will be adding capacity which will further improve their ability to carry HDTV signals.

The NCTA Blue Ribbon Committee on HDTV was established in 1987 to analyze the implications of the various HDTV proposals for the cable television industry. With the assistance of a technical advisory group composed of cable industry engineering professionals, the Committee outlined the parameters of cable transmission of HDTV and developed a comprehensive test plan to be used for evaluating HDTV systems. Members of the cable industry have also served on the FCC's Advisory Committee on Advanced Television Service, helping to set technical standards and other policies that will allow for the fullest development of HDTV for all media.

Cable Labs, the cable industry's research consortium, is currently focused on HDTV as one of its primary research areas. Cable Labs has reached an agreement with the Advanced Television Testing Center (a privately funded testing lab) to test each of the HDTV systems now under development, and has already tested three of the competing systems. It is clear that when HDTV arrives as a commercial technology, the cable industry will be willing and able to deliver it to the consumer.

5. Telco Myth #5: If the telcos do not deploy fiber, consumers will not receive the benefits that fiber optic technology can offer for television transmission

Not true.—Despite their rhetoric, the telcos do not enjoy a monopoly over the use of fiber optics. Cable television companies today are already using fiber optics, which enables cable operators to offer even greater channel capacity and a more reliable signal to subscribers. Currently, the 20 largest cable multiple system operators (MSOs) are all using fiber optics in cable systems serving over 13 million subscribers.

Unlike the telephone industry proposals, however, cable operators are utilizing fiber optics where it makes economic and technical sense—in long-haul trunking and feeder runs, where boosters and amplifiers limit cable system channel capacity and signal quality.

Fiber optics carry a video signal over a greater distance with a lower loss of power and less need for amplification. By combining fiber optic trunking and feeder applications with the coaxial cable currently running from the curb into the home (and which can carry more than 150 video channels), cable systems need not rip out and replace their entire networks in order to bring consumers the benefits of fiber. Indeed, cable companies are bringing subscribers the benefits of fiber at lower cost than the telcos—a cost that will not be passed on to captive telephone ratepayers.

6. Telco Myth #6: The telcos must be encouraged to install expensive fiber optics in order to protect America's technological future

Not true.—Despite the telcos' dire predictions, America's existing communications infrastructure—including both telephone and cable networks—provides consumers with the best telephone system in the world, and with a robust video marketplace offering unrivaled diversity and consumer choice.

The dazzling new services which the telcos claim they could offer in a one-wire, fiber-to-the-home universe are widely available today, over the existing telephone network. More than 1,000 different companies provide consumers with more than 4,000 electronic databases; 5.6 million households are served by electronic mail, and voice information services are universally available to those with touch-tone telephones. There are nearly 100 national and regional satellite-delivered cable networks available to television viewers, and pay-per-view technology is reaching an ever-increasing number of American cable homes.

Simply put, the "Information Age" has arrived, and its further development need not be held hostage by the telcos' efforts to deploy—at consumer expense—their own fiber optic systems.

7. Telco Myth #7: The United States will fall behind other countries in the development of information technologies. After all, French citizens have access to an advanced information system called Minitel, a service denied to Americans because of restrictions on telephone companies.

Not true.—It is ironic that the telcos cite France's Minitel system as a reason to permit their entry into content. As has been noted, Minitel has no control over information content except Yellow Pages and has no financial interest in the sale of that

information. Moreover, Minitel does not provide any video programming. As such, Minitel makes the case against telco entry into television and reinforces the wisdom of the Cable Act's current ban on telco-TV.

8. Telco Myth #8: Without telco-installed fiber optics, consumers will be denied access to multiple video channels, HDTV, pay-per-view, and "video on demand"

Not true.—The telcos, particularly the RBOCs, have made several claims about the video services that they could deliver via fiber optics: they maintain that without fiber, the information age will never arrive. In fact, the cable industry is fully involved in current HDTV research and development efforts; it has invested in HDTV systems currently under development and expects to offer HDTV as soon as—or sooner—than other transmission technologies.

Cable already has the transmission capacity needed for HDTV, as coaxial cable's large bandwidth makes cable fully capable of transmitting HDTV signals. Moreover, the increasing channel capacity of cable systems continues to enhance cable's ability to transmit HDTV programming. Indeed, HDTV has been successfully demonstrated a half dozen times on existing cable systems in the U.S. and Canada (NCTA, HDTV Via Cable Television, January 1992). Moreover, TCI, AT&T, and US West have launched a joint venture in Denver, Colorado, to test two different video-on-demand systems. US West's role in this project is exactly as foreseen by Congress—as a conduit, using its high-capacity trunks to deliver video signals from the program source at AT&T to the cable head-end at TCI.

9. Telco Myth #9: Recent breakthroughs in optical switching now make video-on-demand and fiber-to-the-home feasible

Not true.—Telephone company executives have noted that the equipment used to switch voice telephone calls from one location to another has insufficient capacity to handle video signals. This means that telephone companies are unable to deliver on their promise of switched video services. GTE recently announced development of a "broadband switch" which they claim will solve switching problems for video. However, the capacity of the GTE switch is only enough to switch 256 channels among 128 customers. Thus, if 10,000 people each wanted to watch a different channel out of 100 choices (10,000x100 capacity), the GTE switch would be totally inadequate. Since a practical video switch does not exist, the ultimate cost of switching is a large unknown.

VI. RAISING THE RURAL EXEMPTION FAILS TO PROVIDE NEW CABLE SERVICE

The current rural exemption for telephone companies allows non-BOC telcos in rural communities with populations of fewer than 2,500 to provide cable service within their own service areas. In many instances, independent telephone companies can also deliver cable service in-region no matter what the population if their telephone service areas have fewer than 30 homes per mile. In fact, the FCC has granted a total of 425 waivers and rural exemptions since 1970—including 99 percent of rural telco applications to provide video service.⁵⁴

However, S. 1200 expands the rural exemption and exempts non-urban areas of fewer than 10,000 people from all of the bill's safeguards, including separate subsidiaries, cross-subsidization, buyouts, pole access, and customer protection. What does this change bring to rural America? Virtually nothing, since almost all communities between 2,500 and 10,000 already have cable television service. If the purpose of the proposal is to bring cable to those parts of rural America currently deprived of cable service, raising the exemption—as the following table illustrates—will be ineffective.

Summary Table of Cable Television Coverage in All U.S. Communities Between 2,500 and 10,000

State	No. of communities	Served by cable	Not served by cable
Alabama	106	106	0
Alaska	17	17	0
Arizona	59	58	1
Arkansas	68	68	0
California	248	248	0

⁵⁴ FCC W-602 Log and Section 214 Log.

**Summary Table of Cable Television Coverage in All U.S. Communities Between
2,500 and 10,000—Continued**

State	No. of communities	Served by cable	Not served by cable
Colorado	56	54	2
Connecticut	80	80	0
Delaware	15	15	0
Florida	254	253	1
Georgia	143	143	0
Hawaii	28	28	0
Idaho	35	35	0
Illinois	299	288	11
Indiana	91	91	0
Iowa	91	91	0
Kansas	79	77	2
Kentucky	90	90	0
Louisiana	98	98	0
Maine	105	105	0
Maryland	100	100	0
Massachusetts	135	135	0
Michigan	440	436	4
Minnesota	132	129	3
Mississippi	67	67	0
Missouri	134	133	1
Montana	27	27	0
Nebraska	35	35	0
Nevada	13	13	0
New Hampshire	81	81	0
New Jersey	268	267	1
New York	674	664	10
North Carolina	153	152	1
North Dakota	13	10	3
Ohio	464	458	6
Oklahoma	89	88	1
Oregon	68	68	0
Pennsylvania	828	826	2
Rhode Island	16	16	0
South Carolina	109	109	0
South Dakota	18	18	0
Tennessee	99	97	2
Texas	283	281	2
Utah	52	52	0
Vermont	60	59	1
Virginia	77	77	0
Washington	105	105	0
West Virginia	45	45	0
Wisconsin	226	217	9
Wyoming	15	15	0
Total	6,970	6,891	79

The data show that only one percent of the 6,970 "communities" in the U.S. with populations between 2,500 and 10,000 are not served by a cable company. Moreover, in thirty states, all such communities are currently served by cable.

The handful of communities listed as "not served" are not incorporated towns or independent political jurisdictions. They are very large land areas (100 square miles) with total populations of more than 2,500 who are spread sparsely throughout the entire area. Some of these areas contain small population centers that are already served by cable. Further, under FCC rules, those areas not already served by cable would almost certainly qualify for a waiver of the cable-telco crossownership restrictions because they have a population density of less than 30 homes per mile.

If no currently unserved communities would receive cable service—and if most of the communities ostensibly benefiting from a raised exemption are not generally

classified as rural⁵⁵—then it is clear that the true beneficiaries of this proposal are the telephone companies. According to official census data, if the rural exemption were raised to 10,000, telephone companies would be permitted to provide cable service to communities containing approximately one-third of the U.S. population. Thus, any attempt to raise the rural exemption is nothing more than a thinly disguised effort to put the telcos into the television business—with no safeguards.

VII. CONCLUSION

The "Communications Competitiveness and Infrastructure Modernization Act of 1991" would establish an irreversible precedent for allowing the telephone industry to dominate television in the United States. It advocates unwarranted industrial policy by raising the specter of "foreign competition" in order to give the telephone industry a competitive advantage over the satellite, cable, broadcasting, alternative access, newspaper, and magazine industries. Rather than foster a vibrant, competitive, hybrid telecommunications infrastructure, the bill awards ownership and control of our nation's future infrastructure to the telephone companies. Any "safeguards" that it proposes are either inadequate, unrealistic, or untested.

Most fundamentally, S. 1200 would turn back the clock and recreate a telephone monopoly much like the one which existed before 1982, when AT&T agreed to the Modification of Final Judgment. The MFJ culminated decades of efforts by the U.S. Government to curb the monopoly powers of telephone companies. S. 1200 takes the first unalterable step in recreating a "one-wire" world in which power and control will be centralized in the telephone industry—and where "telco-TV" displaces not only cable television operators, but also broadcasters and satellite program distributors. Once the telcos are in television, Congress will be hard put to get them out.

As long as telcos—a \$100 billion a year industry—control essential voice services, they should be barred from providing information and video services. At present, telcos retain both their legal monopoly and their ability to thwart competition through cross-subsidization and discrimination—a reality no amount of regulation can prevent. If telcos were to enter the cable business today, the ultimate losers would be consumers, who would see their options dwindle as telcos gained control of not only the wires into their homes, but also significant segments of the data, voice, and video travelling over those wires.

Senator BURNS. Thank you, Mr. Verveer. We appreciate your statement and your full statement will be entered into the record for all committee members.

Mr. Harry Shooshan is vice president of the National Economic Research Associates here in Washington. Welcome, sir.

STATEMENT OF HARRY M. SHOOSHAN III, VICE PRESIDENT, NATIONAL ECONOMIC RESEARCH ASSOCIATES, WASHINGTON, DC

Mr. SHOOSHAN. Thank you, Senator Burns. I want to make it clear at the outset that I am here at the request of the U.S. Telephone Association, but the views that I express today are my own and do not necessarily represent those of USTA or its member companies.

I would say at the outset that I think one of the things that this bill does, for which you and Senator Gore and Senator Dole should be commended, is to take what frequently is an inside the beltway clash of special interests, and try to provide a framework for it that looks at the broader national interests that are at stake here. And I do not think you have underestimated those or overstated them.

I think all economists would agree that we need to be about, in this country, the creation of incentives for investment in economically efficient resources and economically productive assets if we

⁵⁵ S. 1200's definition of "rural" dwarfs the one established by many government agencies. For example, the Rural Electrification Administration defines "rural" as any city, village, or borough having a population less than 1,500. The Census Bureau's definition of "rural" applies only to communities with fewer than 2,500 people.

are going to have long-term growth. By the same token, I think we need to be concerned about productivity of American businesses.

And it seems to me that when I look at your legislation it meets these objectives very nicely. One, it does focus on the importance of making investments in the infrastructure, in this case the telecommunications infrastructure. We have heard analogies today of this infrastructure to the highway system that was debated in the mid-1950's. I am struck every time I hear this discussion of the remarkable similarities between that debate, if you go back and read the Congressional Record in the 1950's.

And remember we could get from Washington to Los Angeles in 1954, so it was not a question of whether we could get there, but it was a question of looking to the future and what kind of transportation infrastructure we needed. And it seems to me that is really what is at issue here, that we have get about the job of increasing investment in this country and enhancing productivity.

A third goal is to look very carefully at Government regulation that divides markets, that partitions technology, where Government becomes the manager of a cartel or the protector of specific competitors. That is another thing this legislation focuses on.

I think the other thing that is critical about the approach you have taken in this bill is that it recognizes the need for a radical change. Fine-tuning is not enough. Incremental steps are not enough. And, frankly, that is how I see the video dial tone proposal. I was pleased to hear Chairman Sikes at the outset of these hearings today say that he now understands the need to go beyond what I would call an incremental step in terms of video dial tone.

There is a critical component of our infrastructure that we need to focus on, it seems to me. And I would agree with something Phil Verveer said. I think that the infrastructure in this country is not a single infrastructure, it is a network of networks if you will. But a critical element of that infrastructure is the public switched telephone network.

It is critical because of its attributes. It is ubiquitous. It goes everywhere. It is universal. Nearly every home subscribes, or is connected to that network, and every business is connected to that network. It is uniform. The equipment that works on one end here in Washington is compatible with the equipment that is plugged in in New York or California. And most importantly, as well, it is a common carrier network open to all. That is a critical attribute of this network, and it seems to me that as we focus on policy we have to ask ourselves how are we going to provide the modernization of that public switch network.

Now in the long-distance business, and the long-distance part of that network, we have done a pretty good job, over the last decade in particular as a result of competition. But there is no question that if you look at the local market today, not the future demand but what is there right now, that there are inadequacies in the local exchange portion of that network. And the question for us is how do we create the incentives for the investment that must take place to modernize that local portion of the public switch network.

Senator Gore, before he left this morning, addressed that point when he said we have a high-speed interstate highway but the on and off ramps are not compatible with it. And that is going to be

more and more a problem in the future. So, the question of how we establish these incentives is the heart, it seems to me, of your legislation.

If we had a telephone industry in this country like that in New Zealand, which is unregulated, then we could expect that the investment would take place as those unregulated companies sought unregulated profits. That would be enough of a spur in and of itself. If we had a telephone industry like we have in France or Germany, for example, which is a state-owned monopoly, then, it seems to me, we could look to the Government to assume the risk and to make sure the incentives were there.

I have to disagree with one point that Phil Verveer made right at the outset. He said that in France and in Japan telephone companies were barred from content. One, that is not true. In France, France Telecom is able to provide directories over the Teletel service, which is based on the Minitel terminals.

And second, in the case of Japan where I think he may be more accurately stating the case, you have the government and the telephone industry working in partnership there. So, the government can keep the telephone industry out of content, or restrict their ability to get in, because the government is out there, on the other hand, pushing that investment. That is not the way we do it here. In fact, the way we do it here, it seems to me, is the worst of all worlds. We have a model in this country that relies on regulated competition. And regulated competition, as I said earlier, tends to divide markets, partition technology.

You know your bill, I think unfairly, Senator, has been characterized by people as industrial policy. Actually, the failure to change the status quo is industrial policy because we are picking winners and losers today. The thrust of your legislation, is not, as Mr. Verveer said, to pick a winner. The fact of what you are trying to do is to eliminate restrictions that today hamper and disable a portion of the infrastructure from growing and developing. And that is what we are all about here.

I think we have these disincentives to overcome, and I think the critical disincentive the bill points to is the cable telco cross-ownership restriction. And that is harmful for a variety of reasons. One, because it restricts the ability of telephone companies to fully use the technology that is available to them. And second, because the enforcement of that prohibition has been asymmetrical or uneven. Let me tell you exactly what I mean by that.

The law says that somebody that is providing telephone service cannot also provide cable service in that community. And yet last week, we had the chairman of the FCC receiving a telephone call over a PCS system in San Diego where Cox Communications has the cable company. It was provided by a cable company. It is telephony. When that phone rang Chairman Sikes was completing a telephone call with the gentleman from Cox Cable.

The fact of the matter is, though, and this goes to my point about asymmetry, when GTE wants to experiment with new ways of delivering and providing video in Cerritos, it has got to get a waiver of the cross-ownership restrictions from the Commission. And then it has got to contend with the appeals from that decision and the legal hurdles that the cable industry throws up in its way. Yet

when Cox wants to provide PCS service, it gets the experimental license from the Commission without even a second thought. In fact the Commission is hard at work encouraging cable companies to provide PCS. They have granted over 30 licenses to cable companies to date.

When TCI decides to expand its presence in the competing access market by buying Teleport, now it already has a significant presence there in Digital Access and is buying into Penn Access in Pittsburgh, there are no questions raised about the cable company providing telephony. In fact, the FCC's current mindset is to encourage that.

So, what I am saying is there is handicapping going on, Senator. There is industrial policy being practiced here. There are winners and losers being picked, and the cable industry is one of the winners that is being blessed by Government policy right now.

And the key point, it seems to me, is this is not an industry that needs to be protected. The cable industry is a mature industry. Cable passes 90 percent of homes, is subscribed to by 6 out of 10 homes. It is dominated by large media enterprises such as Time Warner/Toshiba, Cox, and TCI. It is not an infant industry as it was in 1970. It is not even the industry that it was in 1984 when Congress adopted the restrictions.

Irv Popowsky was saying there was concern, and so was Bill Squadron, about equivalency of regulation. There are regulations imposed on the telephone industry: common carrier obligation, open network architecture, cost allocations. Those regulations are not imposed on cable, those are not imposed on the people with whom the telephone industry is being expected to compete.

So, if we want a level playing field, and that is a term I hate, but if you want to eliminate asymmetries, if you want to get on with the business of what we need to do as a Nation, then it seems to me we have to do as you have done in this legislation. And that is to look hard at our current policy, with an eye toward eliminating regulations that divide markets, suppress competition, and deter investment in the important infrastructure in this country. Thank you.

[The prepared statement of Mr. Shooshan follows:]

PREPARED STATEMENT OF HARRY M. SHOOSHAN III

Mr. Chairman, members of the Subcommittee. I am Harry M. Shooshan III, Vice President, National Economic Research Associates, Inc. (NERA). I am here today at the request of the United States Telephone Association (USTA). However, the opinions I express are my own and do not necessarily reflect the opinions or the positions of USTA or its member companies. While my firm has a consulting relationship with USTA and with a number of its members and while I have authored numerous studies for USTA and have testified previously at their request on the subject of today's hearings, my positions on these issues are consistent with the positions I helped to formulate during my ten years as a Congressional staffer, including six years as chief Counsel to the House Communications Subcommittee.

While elimination of the telephone/cable cross-ownership restrictions is at the heart of S. 1200, the sponsors of this legislation are to be commended for focusing on the broader issues involved—U.S. competitiveness, infrastructure modernization and economic development. There is a tendency "inside the Beltway" to view legislation in terms of competing special interests. However, the real challenge is to relate policy to the public interest and, in this case especially, to the national interest. S. 1200 succeeds in doing just that.

With these thoughts in mind, I would like to begin with several general observations. Most economists agree on what needs to be done to ensure long-term economic

growth and to increase the productivity of American business. First, we must encourage more investment in economically productive assets. We have to make it more attractive for businesses to invest in the means of production as a way of securing our economic future. Second, we must encourage competition, whenever possible, as a means for forcing businesses to improve their efficiency and, thereby, our national productivity. Competition can also stimulate technological innovation which, in turn, drives productivity. U.S. businesses will be much more likely to succeed in global markets if they face vigorous competition here at home. Third, we must examine government regulations with an eye towards eliminating those which divide markets and suppress competition. The benefits of competition cannot be realized if government becomes the protector of competitors or the manager of cartels.

S. 1200 makes an important contribution because it starts from these premises in developing a policy for a modern telecommunications infrastructure for the United States. It encourages investment in the "electronic highways" that support the information economy. It relies on competition to stimulate innovation and expand productivity. And it eliminates outdated regulation which prevents the full use and widespread availability of new technology.

S. 1200 recognizes that a radical change in policy is needed if the United States is to maintain its technological superiority in telecommunications in a global marketplace. Finetuning is not enough. Incremental steps are inadequate. A new vision and a national commitment are required if we are to compete successfully in an increasingly global economy.

This is especially true with regard to a critical component of our telecommunications infrastructure—the public switched telephone network (PSTN). Unlike other portions of the telecommunications infrastructure, the PSTN is ubiquitous, universal and uniform. It is also a common carrier network, open to all and not just to a select few.

While long-distance portions of the PSTN have been upgraded during the last decade as a result of competition, modernization of the local exchange portion of that network is not occurring as rapidly. Where are the incentives for investment going to come from to speed up this process?

If the telephone industry were unregulated as in New Zealand, companies would have the incentive to invest to increase unregulated profits. If the industry were a government-owned monopoly as in France or Germany, the government could assume the risk as the French, in fact, did with the deployment of Minitel-based information technology. If government and industry worked in close partnership as is the case in Japan, government could directly induce the investment.

On the other hand, our system of regulated competition provides disincentives to infrastructure investment. Under our system, competitors can mobilize strong political opposition to investments in infrastructure that allow regulated firms to compete with them. If unchecked, regulated competition can lead to an antiquated public telecommunications infrastructure, with disastrous implications for economic development and international competitiveness.

The prohibitions on telephone company provision of video services contained in the Communications Act and the even more restrictive rules adopted by the Federal Communications Commission (FCC) are substantial disincentives to investment by local exchange carriers (LECs) in broadband technology. These restrictions are slowing down the deployment of fiber optics and related electronics. In a digital environment where all types of information move as bit streams, the restrictions impose meaningless distinctions, anachronistic relics of an age when separate networks were needed for voice and video.

Removal of the ban on telephone/cable cross-ownership is the opposite of industrial policy. Industrial policy involves the government in picking winners and losers. The thrust of S. 1200 is to permit competition and to allow the marketplace to sort out the winners and losers.

In fact, to preserve these rules in the face of rapidly changing technology and markets constitutes industrial policy. It is an industrial policy that favors cable companies by protecting them from competition.

Moreover, asymmetrical application of the rules has produced a regime under which cable companies can freely enter the most lucrative parts of the voice market while LECs are barred from effectively entering the video market. When GTE wanted to experiment with new forms of video, it was forced to seek a waiver from the FCC and, once that was granted, face a court challenge from the cable industry. Yet TCI is offering voice and data services to large businesses as a competing access provider and local carrier without a waiver and with the apparent blessing of the FCC. While the FCC enters its fifth year of trying to determine how to change its own telephone/cable cross-ownership rules (which, as noted, are more restrictive

than the statute), it has handed out over 30 experimental PCS licenses to cable companies.

In addition, telephone companies are subject to price and/or earnings regulation, are constrained by regulation in their ability to recover their capital investment and are required to provide access to their network on a nondiscriminatory basis as common carriers. By contrast, cable rates are largely unregulated, cable's investment decisions are not constrained by regulation and access is controlled by the cable operator. Cable also has legally mandated favorable access to utility poles, ducts and conduit and to broadcast programming.

Cable is a mature industry. Cable passes nearly 90 percent of homes and is subscribed to by six out of ten households. The cable industry is dominated by large media enterprises such as Time Warner, Cox Communications and TCI. This is no longer the "infant industry" that existed in 1970 when the FCC decided to force the LECs out of the cable business. Cable has access to new technology such as fiber and radio-based systems. Federal policy encourages, rather than constrains, cable's entry into the provision of voice services. While it is natural for the cable industry to want to preserve its favored status, cable should give up its security blanket of government protection and begin to face real competition. Competition, in turn, will spur cable to modernize its plant, improve service, lower rates, expand program offerings and pursue new markets. This will benefit consumers and advance our national interest.

S. 1200 is about more than competition with cable. It is about getting on with the business of completing a broadband infrastructure in this country. That infrastructure—and the innovation, new applications and jobs it brings with it—will be deployed sooner and more widely if the barriers to competition and disincentives to investment are removed. Further delay will be costly in terms of jobs lost, services denied and diversity reduced. Moreover, to delay is to mortgage our future, a future which is not assured unless we show the will to make the right decisions today.

Senator BURNS. Thank you, Mr. Shooshan. You know this whole town has been absorbed in the last 60 days, I would imagine, trying to do something to stimulate the economy of this country. And we are coming up with tax bills and we are going to flop around here and beat up on each other in trying to something that could get us out of this stagnation. When you try to come up with legislation that maybe looks a little bit further than just next January 1, do we have any idea how many stockholders the telcos have in this country?

Mr. SHOOSHAN. Are you talking about direct stockholders?

Senator BURNS. Well I am thinking everybody comes around and lays the heavy hand of the big bad telcos, and I am wondering how many people, such as a lot of them I know in Montana, that sits out there on a ranch that has got a little chunk of Bell Atlantic or Southwestern Bell. And they are investor owned.

Mr. SHOOSHAN. Yes, Senator. I would guess there are literally millions of direct shareholders. If you look at indirect holdings, that is pension funds that invest in telephone company stocks, I would say there is probably a substantial portion of the entire U.S. population that to some extent has a stake, ownership stake, direct or indirect, in these companies.

Senator BURNS. When we were talking about S. 12, now, I voted against the reregulation of S. 12. Because if you look at their continued increase in employment opportunities just since 1984—and here we are, we are going to put rules and regulations now on that industry which has had a marvelous growth record and stymie the growth of that industry, both the opportunities from a programmer's standpoint, opportunities from technicians, and just the general pattern of putting people to work.

One could not vote for S. 12 because they have a tremendous record. They are improving and delivered a lot of things to my

cities in Montana that we would have never had. And when I look at this, whatever the overall end, the ability especially from the video dial tone which America has got to know that that is the common carrier status of a telephone company offering all of these services to every American, without discrimination to every home, it just makes sense to me. The opportunities to expand, the opportunities on beyond, and let this economy roll. Because I feel like we are in a regulatory recession.

Mr. SHOOSHAN. Senator, can I just respond to that point. Phil Verveer and I may disagree on a lot that was said here today, but I think we will agree on one thing. And that is that both of us in the past, and I for 6 years on the House Communications Subcommittee staff, worked hard to see the shackles that had been placed on the cable industry to protect broadcasters removed. Finally as a result of actions by Congress and by the courts and by the FCC, those shackles were removed.

Now, it seems to me, the problem is that we have put restrictions on those people that compete with the cable industry. We are protecting the cable industry. The cable industry is the primary political force behind resisting these efforts to change and to get a good, modern, procompetitive policy in place.

And it seems to me, that is just an indefensible position that this industry, a mature industry, should say now that they cannot stand to be subjected to the cold light of competition, particularly where that competition will mean that both they and the telephone companies will be more innovative, will be more efficient, and will help us continue to be on the cutting edge in the world.

Senator BURNS. We will have some questions for all of you, and Mr. Verveer we appreciate your comments. And of course, we went through the S. 12 thing, and so I guess we kind of fall on the fence rather than on each side of it this time.

And I especially want to thank the local government representatives and the utilities because the regulators there and the public service commissioners—I, coming out of local government, understand your role in what you face and really appreciate how open you were with us and our staff when we were trying to craft something that lets you complete your role and also emphasize that everything boils down to home. And that is where you folks operate, and we understand that.

I would like to think that I am just in the business of, Mr. Popowsky, in your case I feel like I am in the business of doing away with your job if we establish competition in the marketplace. And I really feel that that serves the consumers, either the competition or the threat of competition usually is the best regulator.

Mr. POPOWSKY. If I could just respond to that. If there were truly competition in many of the public utility areas, then I would gladly give up my job and get honest work. But as long as there is not full competition, then our fear as consumer advocates is that deregulation in the absence of competition is really the worst of all worlds for consumers. And we think it is important that when steps are taken to deregulate, that protections be included to insure that competition will serve the purpose that it is intended.

Senator BURNS. Well, we would invite you to come and sit down and we will show you that we have tried to put in every section

of this bill a procompetitive structure to it. We did not overlook any part. This is truly an infrastructure bill. That is just exactly what it is, it is an infrastructure bill. And we would hope that it serves a purpose.

And if you have any questions, why our office is always open and you may come and sit down and visit with us and we will just walk you through it. And if you have any questions and if you have any suggestions, we would be open to those too. I thank you, and again your statement will be made a part of the record and you will be getting questions from other members of the full committee, as this legislation moves along.

Thank you for coming, and this committee stands in recess.

[Whereupon, 1:10 p.m., the hearing was adjourned.]

APPENDIX

QUESTIONS ASKED BY THE COMMITTEE AND ANSWERS THERETO BY MR. SIKES

Question 1. NCTA has said that part of the problem with regulatory safeguards is that regulators do not have the resources and ability to enforce them. And they point to a 1987 GAO study which concluded that "the FCC staff * * * is able to audit each relevant telco account only once every sixteen years. * * * The level of oversight [the] FCC is prepared to provide will not provide telephone ratepayers or competitors positive assurance that FCC cost allocation rules and procedures are properly controlling cross-subsidy." How do you respond?

Answer. At the time of the GAO audit in 1987, the Commission was at the beginning of the process of implementing its recently adopted cost accounting safeguards. Since that time, we have successfully implemented those cost accounting requirements and taken other steps that effectively protect against cross-subsidy. Thus, the GAO conclusion regarding the FCC's capability is no longer accurate in the 1992 regulatory environment.

For example, the FCC has established a comprehensive five-part program to ensure that interstate ratepayers do not improperly bear the costs of LEC's nonregulated services. This program consists of: (1) rules governing cost allocations and affiliate transactions; (2) the filing and approval of cost allocation manuals; (3) annual cost allocation audits of large local exchange carriers (LECs) by independent auditors, and staff review of those audits including their working papers; (4) reporting of detailed cost data in the Automated Reporting and Management Information System (ARMIS); and (5) staff audits of carriers. In addition, the FCC can order, and has recently ordered, carriers to conduct additional independent audits covering areas of particular concern.

The annual audits by independent auditors are comprehensive and cover all relevant accounts. With the targeting of field audits possible through the cost allocation manuals, ARMIS, and independent audits, FCC resources also have been adequate to effectively enforce this comprehensive program, although the Commission could do even more if Congress had approved our previous requests for additional auditor funding. The FCC conducted 31 audits of compliance with the cost accounting rules and reviewed 29 annual cost allocation audits by independent auditing firms during the period encompassed in fiscal years 1990 and 1991. Adoption of price cap regulation for carriers additionally reduces carriers' incentives and ability to shift costs from nonregulated to regulated activities.

Question 2. One of the concerns that has been expressed by opponents of telco entry into cable has to do with a common carrier acting as a programmer. This, the opponents say, could be inconsistent with the telco's responsibility as a common carrier "to hold itself out indiscriminately to all." Does S. 1200 meet this objection by requiring telcos to have separate subsidiaries for their video services, and have their control limited to 25 percent of the total channels offered?

Answer. Under Title II of the Communications Act, telephone companies are required to provide service upon reasonable request and are prohibited from engaging in unreasonable discrimination. If telcos are permitted to provide programming, appropriate safeguards fashioned under Title II would be necessary to assure non-discriminatory access by non-telco programmers to essential-common carrier services.

In the Video Dialtone proceeding, the Commission stated that one of its core objectives is to assure nondiscriminatory access to video dialtone for video program and other service providers. The Commission is considering in that proceeding regulatory alternatives that would best implement, in a video dialtone environment, the telephone companies' obligations under Title II. In addition, as I stated in my testimony on S. 1200, I generally support greater telco participation in provision of programming.

I believe that nonstructural safeguards can effectively protect against misconduct while permitting efficient provision of nonregulated services. However, I do not be-

lieve that there are significant efficiencies in joint provision by telephone companies of underlying transmission services and video programming content that makes nonstructural safeguards preferable to structural separation in this regulatory area. As I stated at the hearing, a separate subsidiary for telco provision of programming would be bite constructive. S. 1200's 25 percent limit on telco use of channels could serve as a useful complement to Title II nondiscrimination requirements.

Question 3. The broadband network envisioned by S. 1200 envisions universal service so that virtually all Americans—residences and businesses, cities, towns and rural areas—would be able to avail themselves of the voice, video, and data services the network would offer. The alternative is business as usual. Based on cable's track record under the present scheme, what are the prospects of cable bringing all of these services to towns of less than say 10,000 people?

Answer. Local exchange telephone companies are beginning to deploy broadband technologies such as fiber optics in their local networks. Indeed, local telephone companies were responsible for more than 60 percent of the 3.6 million km of fiber deployed in the United States in 1991 (By contrast, local cable TV companies were responsible for 5 percent). Most of this fiber was used in connecting telephone switching centers and in providing high capacity trunks. They are still experimenting with deploying broadband technology further out in the local networks, including "fiber to the curb" and "fiber to the home" trials. In the Video Dialtone proceeding, the Commission tentatively concluded that allowing local telephone companies to provide video dialtone services would create incentives to invest in these advanced network technologies that could integrate voice, data, and video services on a common carrier basis. Incentives to invest in such technologies will speed deployment of new services to virtually all Americans, including small and large users no matter where they are located.

Cable television companies also are using new fiber optic technologies to enhance their traditional coaxial cable broadband networks. Virtually all new cable construction—and much of the replacement construction—uses fiber optic technologies in trunking applications to increase channel capacity and reduce maintenance and operating costs. Most of the cable television fiber deployment, however, has been in urban or suburban systems with higher channel capacity demands. Rural and small town cable systems typically have fewer channels and are lower density and, therefore, have less need for high capacity fiber optic backbone trunks.

Although they may use similar transmission technology in the future (i.e., fiber optics), there are important differences between local telephone and cable television networks that may affect delivery of service to consumers. First, telephone networks are switched and two-way but cable TV networks are not. This means that unless cable television systems radically change their architectures, they will not be able to provide the kind and amount of access to broadband services that local telephone companies provide. Second, and perhaps most importantly, local telephone companies are common carriers with common carrier obligations such as providing nondiscriminatory access to all information service providers as well as end users. Cable television systems are not common carriers and, therefore, do not have to provide access to all service providers.

Question 4. In its 1990 Cable Report, the FCC said it believes that "robust competition" will provide a better safeguard against undue rate increases or service failings and a greater diversity and choice than will additional regulations of the cable industry. Given the record of few cable "overbuilds," and the weak growth of alternative multichannel providers such as wireless cable, who will offer this "robust competition" to cable; and what is the projected timetable for this "robust competition" to materialize?

Answer. Increased competition is preferable to increased regulation as a means of addressing perceived problems in the cable industry. Competition yields the best allocation of economic resources, the lowest prices, the highest quality service, and is most conducive to greater diversity and consumer choice.

Greater telephone company participation in the provision of video programming services would certainly help provide robust competition to cable. Telephone company provision of video dialtone can provide competition in provision of video programming by making broadband common carrier transmission services available on a nondiscriminatory basis to all including independent programmers. Independent programmers could include large and small programming businesses, individuals, and government and educational institutions.

I believe that overbuilds and alternative video providers such as wireless cable can also provide competition.

Question 5. NTIA's Infrastructure Report found that because increasingly large volumes of traffic are moving through broadband transmission and switching facilities, a failure in a system component could potentially result in a large service out-

age. The report concluded that further deployment of broadband facilities will augment the scope of contingency planning efforts. Do the recent large scale service outages help make the case for the need for legislation such as S. 1200?

Answer. I believe that the best way to ensure reliable communications services is to provide customers with competitive options in satisfying their communications needs including local exchange services, interexchange services, and provision of telecommunications equipment. As we work toward maintaining and achieving greater competitive options, the Network Reliability Council, composed of representatives from all industry groups and users, is additionally advising the Commission and industry on immediate steps that will assure network reliability.

It is important to underscore that the telecommunications networks of today are reliable by all historical standards. On average, a customer can expect to complete a call through the network nearly 99 percent of the time. In addition, the growing availability of alternative providers of long distance service—and the emergence of competitive alternatives to local service in some high-usage areas such as cities—is a powerful incentive for the existing telecommunications carriers to upgrade their service. Competition is now occurring in many parts of the country based on such “service quality” issues as dependability, redundancy, and the “right mix” of price in relationship to service reliability.

As you know, S. 1200 declares that encouraging multiple uses of communications technologies is a policy the Commission should continue to follow. The legislation also recognizes the need for the Commission to ensure the interconnection and interoperability of different networks. These provisions, in particular, can lead to optimal reliability through greater choices for consumers.

Question 6. Critics of telco entry into cable cite the existence of the “bottleneck,” and the risks of cross-subsidy and discrimination which exist as a consequence. When the Senate passed S. 173, the manufacturing bill, didn’t it in effect say that FCC regulation and the antitrust laws furnished adequate protection from these same risks for rate-payers and competitors?

Answer. As indicated, the FCC has in place a comprehensive program of safeguards that effectively protect against cross-subsidy for BOC entry into nonregulated activities, including manufacturing. I support elimination of the manufacturing restrictions of the Modified Final Judgment. I welcome the passage of S. 173 insofar as it permits the BOCs to manufacture telecommunications equipment pursuant to FCC safeguards.

Question 7. Concern has been expressed that legislation such as S. 1200 would force consumers to foot the bill for services they don’t want or result in telco investments that do little more than “goldplate” the network. How do you respond to these allegations?

Answer. In general, free and unrestricted operation of marketplace forces provides the best safeguard to assure that telephone companies do not construct facilities or provide services that consumers do not want. Video dialtone would rely on marketplace forces for carrier development of broadband networks instead of government mandate.

In addition, price cap regulation severely limits the ability of carriers to recover costs from ratepayers of services and facilities that are not needed by consumers. Finally, telephone companies ordinarily must obtain certification from state regulators for intrastate facilities, and from the Commission for interstate facilities, that construction of the proposed facilities will serve the public interest. These certification requirements, such as the federal Section 214 authorization for interstate services, also guard against improvident network investments by carriers that would be borne by ratepayers.

Question 8. One of the leading allegations against S. 1200 is that the FCC and the various state commissions would be unable to regulate against cross-subsidization. Can you comment on this allegation and give your opinion as to whether the FCC and individual state commissions can, in fact, guard against cross-subsidization?

Answer. S. 1200 proposes accounting safeguards that are similar to those that the Commission and many states now use to prevent cross-subsidization in relation to current services. Its affiliate transaction requirements are essentially the same as the Commission’s present affiliate transaction rules. These existing safeguards are effective: at the federal level, they deter telephone companies from attempting to misallocate costs and enable auditors to better identify those that might. Importantly, they also aid our efforts to keep interstate rates reasonable by facilitating benchmark comparisons among companies.

Recent advances in the way the Commission and the states regulate telephone companies have decreased the incentives that companies have to cross-subsidize. The FCC has replaced traditional “cost plus” rate base, rate of return regulation

with incentive regulation for over 90 percent of the local exchange carrier industry, including all of the Bell companies and GTE. Many states have adopted similar programs. Under incentive regulation, a carrier's motivation to shift costs to its regulated activities—thereby subsidizing its nonregulated activities—is greatly diminished. With regulated telephone service prices capped under the incentive plans, costs that are shifted or misallocated to regulated services cannot be recovered.

The Commission has greatly increased its data processing capability in recent years, and this capability has played a major part in our efforts to keep interstate rates reasonable. Working with the National Association of Regulatory Utility Commissioners, the Commission also has taken steps to develop a system that makes comprehensive, computer-based information on telephone companies available to all the states as well. By providing the states with information on other telephone companies, in addition to those it regulates, this system allows the states to make benchmark comparisons.

Question 9. S. 1200 provides a number of specific safeguards designed to protect against cross-subsidization (telephone service price cap, cost allocation, separate subsidy, increased penalties, etc.). Would comment on the adequacy of S. 1200's safeguards concerning cross-subsidization?

Question 10. In particular, S. 1200 mandates that any video operations be conducted through a wholly separate subsidiary. Do you believe that such a separate subsidiary requirement is necessary?

Answer. Safeguards are necessary to protect consumers against possible abuses when telephone companies having substantial market power enter other markets. The safeguards S. 1200 proposes could provide significant protection against telephone company misconduct. Nonstructural safeguards can effectively protect against telephone company misconduct while permitting efficient use of carrier resources to provide nonregulated services to the public. However, as I indicated in response to Question 2, I do not believe that there are significant efficiencies in joint provision by telephone companies of underlying transmission services and video programming content that makes nonstructural safeguards preferable to structural separation in this regulatory area.

Significantly, last November the Commission replaced structural separation requirements applicable to the enhanced services operations of the BOCs with nonstructural safeguards against cross-subsidization and discrimination. [Our safeguards against cross-subsidization are described in response to Question No. 1.] Safeguards against discrimination include: Open Network Architecture (ONA) requirements that force the BOCs to unbundle their services so that enhanced service providers do not have to pay for all possible features and functions, but only those features and functions that they need; network information disclosure rules that require that the BOCs provide enhanced service providers with technical information on a timely basis about relevant technical network changes; and nondiscrimination safeguards governing BOC disclosure of Customer Proprietary Network Information (CPNI), which is information regarding a customer's use of the BOC's basic services.

Question 11. Would it be reasonable to expect, under S. 1200, that any losses incurred by the telephone company's separate subsidiary providing video programming would not be included in the rate base and charged to the telephone ratepayer?

Answer. The bill's requirement that asset transfers between the telephone company and its programming affiliate be on a fully compensatory and auditable basis would help insulate ratepayers from any losses that a telephone company's video programming subsidiary might incur. Additional protection could, and would, be realized by exercise of the Commission's rulemaking authority.

Question 12. S. 1200 provides a number of specific safeguards designed to protect against self-dealing (limitation of vertical integration, video gateway requirement, etc.). Would you comment on the adequacy of S. 1200's safeguards concerning self-dealing?

Answer. The safeguards the bill proposes to prevent self-dealing are similar to those that the Commission and the states traditionally have applied to keep telephone companies from engaging in anticompetitive conduct. These safeguards could be refined and supplemented by Commission safeguards. For example, the Commission could determine the measures that telephone companies must take to fully achieve the bill's requirement that telephone companies provide nondiscriminatory access to their video gateways under certain circumstances.

Question 13. Although the FCC, as well as individual state commissions, may have the ability to guard against cross-subsidization, the ability for one to try and break rules is always present. S. 1200, therefore, contains a "death penalty" provision. Under that provision, if a telephone company engages in cross-subsidization, it would be forced to divest their subsidiary providing cable service. That penalty

would be in addition to the penalties available in the Communications Act of 1934 and FCC rules and regulations, the individual state commissions activities and penalties, and the antitrust laws. What do you believe would be the effect of such a penalty in addition to the penalties available to you the 1934 Communications Act?

Answer. S. 1200 provides that if the Commission finds, after opportunity for hearing, that a carrier has engaged in a consistent pattern of willfully and knowingly violating the safeguards provisions of the proposed new law, the Commission shall order the carrier to divest its affiliated programming subsidiary.

In determining whether to apply the broad range of tools currently in the Communications Act, the Commission considers the magnitude of the violation and the surrounding facts and circumstances. Divestiture of programming operations may in many cases be the appropriate remedy for a consistent pattern of willful and knowing violations. However, there may be cases involving only minor violations where mandatory divestiture is not appropriate. Making explicit the Commission's discretion and authority to require divestiture in appropriate circumstances would provide additional incentives for telephone companies not to violate the safeguards provisions of the bill.

Question 14. Does the Commission have any evidence, or reason to believe, that the customers of telephone companies currently offering cable television services are paying any more for telephone service than customers of telephone companies who are not offering cable services?

Answer. In instances where telephone companies have been permitted to provide video programming, such as under the rural exemption, the Commission has imposed strict accounting requirements to protect ratepayers. The Commission has received no formal complaints since 1983 alleging improper accounting.

In 1983 a complaint was filed alleging a variety of misconduct involving the Northwestern Indiana Telephone Company (NITCO). After a vigorous investigation, the Commission imposed the maximum possible forfeiture under its then existing statutory authority and required NITCO to divest its cable television operation.

Question 15. An FCC price cap plan for local telephone companies could provide a basis for additional safeguards by removing the incentives and opportunities for cross-subsidies. Would you comment on this aspect of the price cap plan?

Answer. The sharp reduction in incentives for cross-subsidization is a major benefit of price caps regulation. Under traditional cost-plus regulation, if the local telephone company could manage to shift costs from the accounts of a more competitive, unregulated activity to the regulated rate base without detection, it could arguably obtain higher rates for regulated basic telephone service. This kind of cross-subsidization, if undetected, would injure average telephone subscribers and provide the unregulated entity with lower operating costs and an unfair competitive advantage.

Price caps—which are now in effect for the major telephone companies, including the Bell Operating Companies and GTE—eliminate the incentive for attempting such improper cross-subsidies. To make a higher profit, these local telephone companies now have to increase the pace of their productivity improvements.

Because price caps reward local telephone companies for becoming more efficient in their core business—and for increasing demand for their network services—the Commission anticipates that the companies will reinvest substantially in their network in order to generate additional revenues.

Conversely, telephone companies using price caps will have little incentive to shift costs from unregulated to regulated ventures because—unlike traditional rate-of-return regulation—the price caps do not change as costs increase.

Question 16. If telephone companies construct a broadband delivery system, would it be reasonable to expect telephone companies to adopt an exclusionary policy with regard to access by third party programmers or other information service providers to this broadband system, regardless of whether the telephone company provides video services through a separate subsidiary?

Answer. If telephone companies construct and operate a broadband delivery system, they would have incentives to maximize use of, and revenues from, broadband transmission services provided over it. Greatest use of the network might be accomplished by promoting its use by as many diverse parties as possible through reasonable and nondiscriminatory access, prices and other terms and conditions. However, the telephone company might also have countervailing incentives to discriminate in favor of its own, and against independent, video programming services.

S. 1200 recognizes this potential for exclusionary conduct and establishes safeguards. In addition, in the Video Dialtone proceeding, the Commission stated that one of its core objectives is to assure nondiscriminatory access to video dialtone for video program and other service providers. The Commission is considering regulatory alternatives that would best implement that objective.

Question 17. S. 1200 provides assurances that cable companies will have access to telephone company poles, ducts and conduits. Would you comment on this provision? Is there any reason to believe that the Pole Attachment Act of 1978 has not lived up to its purpose in allowing cable television companies access to telco poles and conduits?

Answer. I believe that regulatory oversight will continue to be necessary in order to assure fair and nondiscriminatory access to telephone company controlled poles and conduit if telephone companies are permitted to provide video programming. Section 656 of S. 1200 is fully consistent with that view. I have no reason to believe that the Pole Attachment Act's remedies for discrimination in access to poles and conduit have been inadequate to address pole and conduit disputes.

Question 18. S. 1200 prevents local governments from unreasonably refusing to award multiple cable franchises. would you comment on this provision?

Answer. I strongly support nonexclusive franchising. Restrictive franchising provisions can hinder competition in cable service. There is a strong federal interest in promoting competition in cable television service, and the awarding of multiple franchises would further that objective. I fully support the proposed requirement in S. 1200 that local governments not unreasonably deny franchises.

Question 19. Certain parties involved in the debate over S. 1200 contend that the Commission does not possess the resources to provide the oversight contemplated by S. 1200's regulatory safeguards scheme. Does the Commission possess the necessary resources to carry out the mandate of S. 1200? If not, what would be required to accomplish the task?

Answer. Assuring adequate funding has been a priority during my tenure as Chairman. The need for increased resources that could be occasioned by S. 1200 can be accommodated by Congressional action on appropriate budget requests.

Question 20. Japan, West Germany, France, and the United Kingdom are all aggressively deploying broadband technology. Does the Commission have any evidence that telephone subscribers in those countries are paying unreasonable or excessive rates? Further, does the Commission have any evidence that there have been tangible benefits from the deployment of broadband technology? Is the United States communications infrastructure likely to be enhanced by passage by S. 1200?

Answer. In the Video Dialtone proceeding, the Commission stated that permitting companies to provide video dialtone services will remove unnecessary barriers to the development and construction of broadband facilities and will offer incentives to develop and construct, operate, and promote such facilities for the general public benefit. The Commission tentatively concluded that development of an advanced, cost-effective telecommunications infrastructure is more likely to be achieved more sickly if a video dialtone policy is adopted.

A modern telecommunications infrastructure is vital to our nation both domestically and in the increasingly competitive international marketplace. This is true not just for telecommunications products and services, but also for all those industries increasingly dependent on telecommunications for their operations. Telephone companies must play a major role in assuring that the telecommunications infrastructure provides the services necessary for the United States to remain competitive.

Efforts in other countries to deploy fiber-to-the-home may provide useful experience for the United States. In fact, however, fiber-to-the-home trials are underway in the United States. The BOCs and GTE have conducted a total of approximately 40 fiber field trials from 1986 to the present.

The Commission has engaged in bilateral discussions on communications issues with many countries that are aggressively developing broadband infrastructure, including Japan, West Germany, France, and the United Kingdom. These discussions have not resulted in any information that broadband infrastructure development in those countries has resulted in excessive rates to telephone subscribers. I believe that appropriate safeguards can assure that fiber deployment does not result in excessive rates to telephone subscribers.

Question 21. NTT is aggressively pursuing the deployment of broadband technology in rural Japan through its "Teletopia" project. Does the United States have any similar plan for rural America. Would passage of S. 1200 be more likely or less likely to result in the more rapid deployment of broadband technology in rural America?

Answer. Assuring that rural areas receive the same benefits of communications technology and services as more populous regions is an important goal. Modern communications technology can keep rural America competitive in the information age. By stimulating investment in broadband technology, a video dialtone policy would promote provision of advanced broadband services to rural areas.

Telephone companies are permitted today to provide video programming in communities of less than 2500 persons. This "rural exemption" is designed to assure

that rural areas are not unnecessarily deprived of cable television service. As you know, S. 1200 would increase the rural exemption to communities of less than 10,000 persons. In the Video Dialtone proceeding, the Commission also is examining whether the rural exemption should be extended to larger communities.

PREPARED STATEMENT OF DEAN SWANSON, CHAIRMAN OF THE BOARD, UNITED STATES TELEPHONE ASSOCIATION

Good morning, Mr. Chairman, members of the committee. My name is Dean Swanson. I am appearing before the committee on behalf of the United States Telephone Association for which I serve as the chairman of the board of directors. I am also president of Standard Telephone Company located in Cornelia, Georgia.

The United States Telephone Association, or USTA, is the primary trade association of the local telephone industry. There are 1,359 local telephone companies in the United States, of whom almost 1,100 are members of USTA. USTA's membership includes each of the largest 33 local telephone companies, and all but two of the largest 50. Each of the Bell operating companies divested by AT&T became a member of USTA at divestiture. The membership of USTA includes nearly 1,000 quite small telephone companies, each of which serves less than 20,000 local access lines. The association itself has roots that stretch back to 1897.

I. INFRASTRUCTURE CONSTRAINTS

Before I address the specifics of Senate Bill 2800, and why USTA is so supportive, it may be helpful to outline the broader infrastructure context into which this vitally important legislation fits.

NTIA has undertaken an inquiry into the role of nation's telecommunications infrastructure. The impetus of this inquiry, and, indeed, one of the driving forces of the telco cable effort, is a growing awareness that America's telecommunications infrastructure may not be advancing fast enough to maintain our nation's competitive edge in world markets, nor to bring the benefits of the information age to all of our country's citizens in a timely manner.

USTA's filing in the NTIA inquiry, and those of the individual telephone companies, demonstrate that despite the substantial development efforts that are going forward, the U.S. may not be retaining its dominance in the provision of telecommunications services.

There are two fundamental reasons for concern over infrastructure development. One is the very aggressive, national focus that the advanced countries in Europe and Asia are taking with respect to telecommunications advancements. Their pace of development is accelerating markedly as they seek to position themselves for advantage in world markets. Secondly, the pace of U.S. infrastructure development has been impeded in recent years by well-intentioned, but ultimately counter-productive constraints imposed on telephone companies by current public policies.

There are a number of sources of constraints imposed on LECs that impede their efforts to deploy an advanced infrastructure. Examples are constraints on the provision of video programming from the 1984 Cable Act, constraints on the integrated provision of enhanced and information services imposed by the FCC's computer inquiries, constraints on new service introductions imposed by rigidities of the regulatory process at both the state and federal level, constraints imposed by regulation on the timely recovery of invested capital, and constraints imposed by the MFJ.

Many of these constraints, while aimed at promoting competition have missed the mark by protecting competitors instead. They withhold important contributors—telephone companies—from market participation and new service opportunities that would incent the more-rapid deployment of an advanced telecommunications infrastructure.

The telephone industry role in this is important to our whole society, as telephone companies serve not only as the first point of interconnection for the overwhelming majority of users, but also as the providers of the underlying infrastructure used by myriad competitive suppliers of enhanced and information services. If we are to keep pace in the global market with other economically advanced countries and, equally importantly, if we are to bring the information age to America's suburban and rural areas we must remove these arbitrary and misplaced barriers on LEC's ability to compete. S. 2800 provides a much needed first step.

If telephone companies are permitted to compete with existing cable companies, there is no guarantee that we will succeed, but there is no doubt that even the threat of competition will benefit cable consumers.

II. CHANGES IN TECHNOLOGY, CONSUMER NEEDS AND THE NEED TO RESPOND TO GLOBAL MARKET CHALLENGES WARRANT AMENDMENT OF THE CABLE ACT TO PERMIT TELCO PROVISION OF CABLE

While this committee was guided by what it believed to be the best interest of the consumer and nation in 1984, circumstances have changed significantly in the interim. It is now imperative that telco entry be not only permitted, but encouraged. These changed circumstances include:

- After over 30 years of cable monopoly, areas in both rural America and the nation's inner cities still are not served by cable. Failure to introduce a market force to ensure that these areas be given access to cable could result in the nation being divided into a society of information haves and have nots.

- Technological changes, such as fiber optics and digital switches, make possible and economical services that heretofore were not thought of, including an integrated, ubiquitous, switched broadband network.

- Our competitors in the global market, including those in Asia and a United Europe are spending billions in government funds to build their own fiber optic telecommunications networks and to develop the technology to support those networks.

We believe the freedom to fully compete in cable, not just the delivery of video programming, but also its packaging and programming as provided by S. 2800, is an important response to each of these challenges.

Problems being experienced in many communities around this country due to cable's excessive market power have been documented by representatives of local government and consumer activists. I have attached to my testimony studies commissioned by USTA and filed with the FCC which exhibit this undue market power. The findings of these studies have been further supported by the Department of Justice.

My message is not one of cable bashing. I come with a positive message to highlight a vision, shared by many members of this committee, of a universally available broadband fiber optic public switched network.

III. PERMITTING TELCO ENTRY IS PRO CONSUMER AND THE TELCO BASHING MYTHS OF OUR DETRACTORS ARE FALSE

The opponents of change in their quest to maintain the status quo, through which they are the beneficiaries of a governmentally protected market, falsely argue that:

- All services except full motion video can be delivered over copper (and not coincidentally, that video delivery should be left to the cable industry);

- The cost of fiber is too expensive; and there are no safeguards against cross-subsidization.

- There can be no protection against cross-subsidization if telephone companies are permitted to compete.

Each of these arguments should be recognized for what they are, protectionist pleadings, but certainly not the truth.

NEED FOR FIBER

Copper, and coaxial cable in its current system architecture, can not provide switched, two-way, high definition video and the myriad of services a fiber network can offer. That such a network is something that would be good for this nation is already being demonstrated by small telcos around the country. For instance, in Oklahoma's rural panhandle, the local telephone cooperative, in response to a community need, linked the community's schools with fiber. This has allowed faculty costs to be reduced while, at the same time, increasing the teacher to student ratio. The commitment of the panhandle telephone cooperative to improved and proven technology permitted each of the schools to stay open and to enrich the educational experience for each of the students.

Just imagine the range of medical applications for such a system. A switched video system offers the residential consumer a wide range of viewing options and the ability to control his or her access to television. The GTE experiment in Cerritos and the proposed Contel trial should give us new insights into the application of this technology. I might add that these are benefits which come with switched fiber deployment, not from dbs or wireless cable.

COSTS OF FIBER DEPLOYMENT

Our detractors say that fiber is too expensive. Just last June they released a study stating that it would cost almost 900 billion dollars to wire this country. Today, even they agree that the number is probably closer to 300 billion. Mr. Chair-

man, according to the numbers of our detractors, the price of deployment has already fallen by a third.

I could cite studies which establish the costs to be lower than 200 billion dollars and studies which say deployment of fiber to be equivalent to that of copper in less than five years. I could point out that the telephone industry already spends 20 billion dollars a year to upgrade our infrastructure. but, please allow me to illustrate why I believe debating the cost of fiber the nation serves no useful purpose.

In 1960, were we to have estimated what it would have cost for every American to purchase a pocket calculator, we would have had to multiply the population by a number in the hundreds of dollars. Today, a better quality calculator costs less than ten dollars. We believe that trying to estimate the cost of fiber to the home is much like that calculator.

Costs for the deployment of fiber has fallen and will continue to fall. But unlike the calculator, this committee may rely upon an established safeguard. The individual state public utility commissions will not allow us to fully deploy fiber until it is cost justified.

SAFEGUARDS

Finally Mr. Chairman, as to the claims of our detractors that we will cross-subsidize and that no level of government can properly police against cross-subsidies, we would cite the comments of FCC Chairman Sikes and the numerous state utility commissions that have stated that they not only can police against cross-subsidies, they are doing it today.

Mr. Chairman, as previously stated, cable would not be the first unregulated business in which standard telephone would be involved. my company alone has ?? unregulated operations and the various commissions and FCC have established guidelines for these operations.

My company is presently audited annually by:

1. The Georgia PUC
2. The National Exchange Carrier Association [NECA]
3. The Georgia Exchange Carrier Association [GECA]??
4. AT&T and ?? other interexchange carriers
5. BellSouth Telephone Company

My company is further subject to an audit every two years by the REA. In addition to this audit, every contract or agreement between my regulated telephone company and an affiliated company must also be approved by the REA.

Finally, Mr. Chairman, I am also subject to oversight by the FCC.

To now claim that we can not enter a new field because of the fear of cross-subsidies is either naive or disingenuous.

While we believe that additional safeguards are not needed, but in an effort to better serve our customers and respond to the concerns of Congress, we are more than happy to discuss additional safeguards, we are willing to accept the very strong safeguards required of us by Senator Burns' legislation.

We would only ask that this committee remember that we are competing against a vertically integrated entrenched industry which is unregulated, free to cross-subsidize and unlimited in their ability to vertically integrate.

The telephone industry's vision is of a diverse and competitive cable environment that provides benefits not only to the viewing public but strengthens this nation's global competitiveness. This is an environment that this committee has the opportunity to hasten with the passage of S. 2800.

By permitting telco competition, S. 2800 would:

- put downward pressure on cable rates by introducing competitive market forces;
- increase viewing options as more cable providers enter the market;
- provide financial incentives to accelerate the deployment of fiber optic technology to the whole nation; and
- speed the day when all Americans, both rural and urban alike, have available to them the newest of communications essentials, cable television.

CONCLUSION

If the nation's telecommunications infrastructure is to progress at an adequate pace, public policies must be changed to not only remove arbitrary barriers telephone companies now face, but policy must be changed to foster conditions that promote the deployment of advanced infrastructure and new services. We believe that this approach is the greatest strength of the Burns' telco/cable approach. It is legislation that is cognizant of the broader context of infrastructure issues such as universal deployment, efficiencies and timely deployment.

We are eager to compete and it is in the nation's long term national interest to permit the telecommunications industry to compete, not just to control rates and quality of service to cable television customers, but more importantly, for our nation's long term economic well being. The Congress and U.S. industry too, has been rightfully criticized for failing to plan for the long range. Here is an opportunity for Congress to unleash American industry to compete in the technology of the next century.

By endorsing the competitive resolution to cable proposed in S. 2800, this committee will do much more than merely permit telco entry into cable. You will allow this nation to prepare for the economic and social challenges of the next century with new vigor and the newest of tools, a modern competitive information infrastructure.

Mr. Chairman, there is no public interest to be served by precluding my company, or any telephone company, from becoming a partner in the provision of new services. I hope that my testimony has made clear the public policy benefits to be achieved by allowing telco entry and hope that this committee will act favorably on S. 2800.

III. ADVANCEMENTS IN TECHNOLOGY, CONSUMER DEMAND AND THE NEED TO RESPOND TO GLOBAL MARKET CHALLENGES NECESSITATE AMENDING THE CABLE ACT TO PERMIT TELCO PROVISION OF CABLE

If Taconic's experience is not sufficient, the committee must accept since the cable act's passage in 1984, circumstances have changed significantly. These changed circumstances make it imperative that telco entry not only be permitted but encouraged.

Circumstances have changed:

- After more than 20 years of a protected cable monopoly, areas in both rural America and in the nation's inner cities still are not served by cable. Failure to permit telephone companies to serve these areas with broadband technology could result in a nation of information "haves" and "have nots."

- In those areas served by cable systems, the introduction of competition will be the only real protection available to consumers. Rate regulation as proposed by the FCC will not bring the benefits of competition such as technical innovation and new services.

- Rapid technology advancements, especially with fiber optics, make it possible and economically feasible to deliver services that previously were not possible with the copper-based voice network. For the first time, it means telcos can offer an integrated capability for voice, data and video. Up to now, those of us in the cable business had to build separate facilities.

- Our competitors in the global market—in Asia and in a united Europe, specifically telecommunications—sophisticated Japan, France, and Germany, are spending billions of government yen, francs and dutchmarks to build their own fiber optic telecommunications networks and to develop the technology to support those networks, which they will then export to us.

If we fail to deploy fiber, it will cost us jobs and our nation's competitiveness.

USTA believes the freedom to compete fully in cable TV, not just delivery, but the licensing, packaging, ownership and production of video programming as provided by H.R. 2546 will begin to answer these domestic and international challenges. With video services as a potential source of revenue, we can match or even beat the Japanese timetable for wiring the nation with fiber.

IV. THE EXPERIENCE OF RURAL TELCOS DEMONSTRATES THAT SUFFICIENT SAFEGUARDS EXIST AT THE STATE AND FEDERAL LEVELS TO PROTECT THE INTERESTS OF RATE PAYER, STILL TELCOS ARE WILLING TO ACCEPT ADDITIONAL STRUCTURAL AND REGULATORY SAFEGUARDS WHERE APPROPRIATE

A. Cost separations

Taconic has successfully complied with the federal and state safeguards to protect the telephone ratepayer from cross subsidization for almost 10 years. If anything, our cable ratepayers may be subsidizing the telephone ratepayers because the rules governing us are so strict. Taconic has successfully been providing cable TV without a cross-ownership incident or any allegations of impropriety. There are over 500 cable systems being operated by telephone companies throughout the country. In no instance has there been a finding of cross-subsidy.

Still, USTA and Taconic believe that the requirement of a joint board convening to determine what other regulatory safeguards might be needed, as provided in H.R. 2546 is acceptable if limited to cable and completed in a timely manner.

B. Separate subsidiary

A separate subsidiary is not required bylaw for a rural telco but would be required by H.R. 2646 for a non rural telco providing cable. Our cable company uses a separate network and is operated as a separate part of our business. Not only does it have its own accounting books, it has its own prone numbers and office equipment, right down to the paper clips. The requirement of a separate subsidiary is something the industry would accept as long as it does not destroy the essential economies of operating an integrated network.

C. Additional protection

We willingly operate under current safeguards and are willing to address Congress' needs to provide additional regulatory and structural safeguards. We believe, unlike pure rereg bills, the strength of the Boucher and Oxley bill is its search for a competitive and long term consumer benefit from the cable debate. It achieves this goal by encouraging telephone companies to deploy fiber and focusing on the terms and conditions of entry and prohibits the purchase by telcos of existing cable systems.

V. THE NEED FOR A BROADBAND NETWORK

Neither the current copper telephone infrastructure nor coaxial cable network can provide switched high definition video, high speed data and the range of services made possible by a switched broadband network.

Taconic is currently integrating its cable and telephone network to construct a two-way, interactive video network that will link together three school districts and the board of cooperative educational services by September. Our distance learning network will allow students located at one school to participate in a class taught by a teacher in another school 20 miles away! Using video cameras, microphones, and television monitors, students will be able to see, hear, and communicate with their teacher and fellow classmates regardless of their location.

This goes far beyond delivering one-way video to the classroom or providing schools with free "drops" as some cable systems are beginning to do.

During this time of budget constraints and low enrollment in specialized classes like Japanese and astronomy, these students have the ability to graduate with the same well-rounded education as their counterparts in cities and suburban areas. Moreover teachers, who might otherwise have been laid off, will remain employed because their salaries will be shared among the various schools.

Mr. Chairman, building such a network is not a purely charitable act by Taconic. We understand an educated labor force is a key component to attracting new business to an area. The economic vitality of the regions we serve directly correlate with the economic vitality of my company.

Our hopes are to expand the network within the next two years to include two area community colleges. This way adult residents of the communities will be able to take advantage of the network via training seminars or college-level courses—all without traveling.

As a graduate of one of these high schools, I am particularly proud that my company was able to assist the community and actually deliver them into the 21st century. Partnerships like this, between phone companies and the public sector, are becoming more and more common.

The network Taconic has deployed is the beginning of not only a whole new way to learn but to shop, conduct business, and receive health care. A switched video system offers the residential consumer a wide range of viewing options and the ability to control access to television. Experiments in Cerritos, California and Sydney, New York will give us a more in-depth view into the applications of this technology.

VI. FCC ACTIONS

I am sure you are familiar with the recently proposed FCC rules to re-regulate cable TV. Taconic's cable system is one of the companies that will be regulated under these rules. The prescription the commission wrote gives the medicine to the wrong patient. My company is not one of the systems that is abusing their position.

CONCLUSION

It is my hope that by the end of this Congress, a policy will be in place to ensure viewers will have more diverse quality programming choices at a reasonable price and businesses will have high speed data transmission capabilities.

I am asking Congress to ensure that all citizens have access to the information services that will significantly affect our economy and interaction with each other.

Mr. Chairman, the public interest will be served by allowing telephone companies to become a partner in the provision of new services. I hope that my testimony has made telco entry and the benefits of this technology apparent to this committee and that H.R. 2546 will be acted upon favorably and expeditiously.

As a member of both the cable and telephone industries, I know with competition both industries can only improve.

PREPARED STATEMENT OF RICHARD HUNT, VICE PRESIDENT, HUNTEL SYSTEMS, INC.

Good morning Mr. Chairman, members of the committee. My name is Richard Hunt of Blair, Nebraska. My brother Hugh and I operate HunTel, a family of related telecommunications companies. I am pleased to testify here today before this committee on behalf of HunTel and the United States Telephone Association, the national representative body of the local exchange industry.

Mr. Chairman, I am here to deliver two messages. First, in the telecommunications arena, competition is superior to regulation in promoting consumer benefits and technological advancements. Further, telephone companies are logical competitors for cable operators. We hope that this committee will first look to competition and only in its absence to regulation in addressing the delivery of cable television services. Telco competition will not only protect consumers, it will also serve as an incentive to help this nation rebuild its telecommunications infrastructure.

My second message is that despite the claims of our detractors, the competitive market place is not weighted in favor of telcos. There have been, and will be times, in which despite our best efforts, telephone companies lose. But while one industry might be unsuccessful in a given locale, the real winners will always be the American consumer and the competitive posture of America in the global market.

HunTel, a small but diverse telephone company, provides local exchange telephone service to about 10,000 customers in fourteen communities in eastern and northern Nebraska. We also provide cable television services to 980 households in four of the smaller communities we serve.

We have a proud tradition at HunTel of being innovative and bringing the best services possible to our consumer. This is borne out by our history. For despite being a small independent, in predominantly rural Nebraska, HunTel built the first telephone exchange in Nebraska with all of the telephone lines buried, and were the first with all private line telephone service. In 1978, we installed the first software-controlled digital switch in Nebraska, and placed into service the first automated air-to-ground telephone station in the nation.

In this tradition of technological development and customer services, HunTel has built and operated a dozen cable television systems. I believe that our experience in the city of Kearney, Nebraska, documents my dual theme.

City officials in Kearney approached HunTel and requested that we come in and "overbuild" the city to provide a competitive alternative to the incumbent cable system, a national MSO. The city's request was in reaction to the incumbent cable system's escalating rates and perceived insensitive service standards.

Because there were no legal prohibitions to us providing cable and because we were convinced that we could build a cable system to provide double or triple the number of channels and vastly superior service at rates competitive with the rates that were being charged, we agreed.

We felt assured that many local Kearney citizens would invest in the new system, and that practically all local customers would switch to our new system.

Initially we were successful in our business plan. As we proceeded with construction, most customers did switch over to our system.

Responding to this competitive threat, the other company withdrew their application for a rate increase, added channels, and ultimately greatly reduced their rates. They drove us out of the business.

We were finally forced to sell because we were the victims of a cross subsidy. Our competitor, while dropping their rates in Kearney, neither dropped their rates nor increase their service in the surrounding communities, and used that capital against us.

Mr. Chairman, I believe that there are several lessons to learn from our Kearney experience. We demonstrated that telcos know how to compete, and although we did not succeed, the citizens of Kearney benefited greatly by our willingness to take a risk. It further demonstrated that competition, not regulation brought down prices and improved service in Kearney.

If telephone companies are permitted to compete with existing cable companies, there is no guarantee that they will succeed, but there is no doubt that even the threat of competition will benefit cable consumers.

Finally, our experience in Kearney demonstrates that the claims by our detractors that we will cross subsidize is a red herring. Despite our diverse businesses with regulated and unregulated services, we have never been accused of misusing our regulated revenues. There are numerous safeguards in place to prevent such cross subsidies and the telephone industry has often expressed its willingness to sit down with the members of Congress to establish other safeguards to allay the fears of any members.

I would also point out the inconsistency in the argument being made against us on cross subsidies. Our critics say that we will cross subsidize because no regulatory agency can police our business and they cite the current allegations against NYNEX as proof. While legal proceedings have not been completed on NYNEX, the fact alone that the company is being challenged demonstrates that cross subsidy can be and is being policed.

We believe the slowing of cable rates and establishment of national cable service standards rates are a direct reaction to the threat of competition from telcos. The individual consumer could reasonably anticipate significant additional benefits when true competition is possible.

But it is not just the rights of an individual video entertainment consumer that are at stake. This nation is faced with a global market challenge we need to ensure that all Americans can participate—rural and urban, rich and poor. Our rural customers will never get cable television and other information service if we don't provide them.

While it is fashionable to feel threatened by Japan and a united Europe, there is no doubt in my mind that U.S. industry can compete effectively. But we must be permitted to compete. We are eager to compete and it is in the nation's long term national interest to permit the telecommunications industry to compete, not just to control rates and quality of service to cable television customers, but more importantly for our nation's long term economic well being. The Congress and U.S. industry too, has been rightfully criticized for failing to plan for the long range. Here is an opportunity for Congress to unleash American industry to compete in the technology of the next century.

If the U.S. telecommunications industry is permitted to compete in the video market, it will accelerate the installation of a fiber network the nation over, not just in the major urban or metropolitan areas but also rural America.

Rural America will be fibered and will have cable, because rural telephone companies are led typically by entrepreneurs. We know what this nation's telecommunication's infrastructure needs to continue its leadership role in the world economy.

By endorsing the competitive resolution to cable proposed in S. 1068, this committee will do much more than merely permit telco entry into cable. You will allow this nation to prepare for the economic and social challenges of the next century with new vigor and the newest of tools, a modern competitive information infrastructure.

Thank you.

PREPARED STATEMENT OF JOHN SODOLSKI, PRESIDENT, UNITED STATES TELEPHONE ASSOCIATION

I. INTRODUCTION

Chairman Inouye and members of the subcommittee, I am John Sodolski, president of the United States Telephone Association on whose behalf I submit this statement in support of the goals of S. 1200, "The Communications Competitiveness and Infrastructure Modernization Act of 1991."

S. 1200, through the leadership of Senators Burns and Gore, has served to focus the subcommittee's attention on the need for a national telecommunications policy to encourage the deployment of a feature rich broadband interactive public switched network. For their leadership in this and many other areas the members of USTA express their gratitude.

Mr. Chairman, the members of USTA are also most grateful to you for holding this hearing and hope that we may continue to rely upon your leadership to move forward telecommunications infrastructure modernization legislation.

II. THE UNITED STATES TELEPHONE ASSOCIATION

The United States Telephone Association (USTA) is the primary trade association of the local telephone industry. USTA's membership includes the all the larger local telephone companies, including the Bell operating companies, as well as over 1,000 telephone companies with 20,000 or fewer access lines. USTA itself dates to 1897.

III. BACKGROUND

USTA has appeared before this subcommittee every year since 1989 to address the issue of telco cable. The goal of this statement is to recall for the subcommittee the testimony of USTA representatives on the need for market incentives for the modernization of the nation's telecommunications network and the role repeal of the telco cable cross ownership ban could play in creating such a market.

Specifically, the following representatives of USTA¹ appeared before this committee:

On S. 1068 [101st Congress]

- Dean Swanson, 1989-90 USTA chairman and president of Standard Telephone of Cornelia, Georgia on November 17, 1989;
- Richard Hunt, vice president of HunTel Systems, Inc. of Blair, Nebraska on April 4, 1990;

On S. 2800 [101st Congress]

- Dean Swanson, 1989-90 USTA chairman and president of Standard Telephone of Cornelia, Georgia on July 24, 1990; and

On S. 12 [102nd Congress]

- John Sodolski, president of USTA, on March 14, 1991.

Copies of each of these statements are attached for the subcommittee's reference. Additionally, because no testimony has been placed in the record by USTA ON S. 1200, I have attached the June 26, 1991 testimony of Lorinda Ackley, president of Taconic Telephone Corporation and chair of the USTA Government Relations Committee ON H.R. 2546, the House companion bill to S. 1200.

I believe the testimony of Ms. Ackley and this compilation of statements should provide the subcommittee with a clear understanding of USTA's position on S. 1200 as well as the need for the Congress to provide consumers with not only a choice in cable television but also the promise of a universally deployed broadband network.

IV. NEED FOR LEGISLATION

In 1989, Dean Swanson, then chairman of USTA, outlined for this subcommittee why the local exchange industry believes there is a need for legislation:

"[U]nless telcos are freed from anti-competitive restraints, including the Cable Act's crossownership restrictions, American consumers will be forced to wait for new services made possible by a fiber based broadband network and other advanced network technologies.

"[Local telephone companies feel a] responsibility for making our network the most advanced and sophisticated in the world.

"[USTA] takes this responsibility very seriously. We expend \$20 billion per year in new and upgraded facilities to fulfill our obligation to meet the ever increasing communications needs of America."

Mr. Swanson went on to outline for the subcommittee that repeal of the crossownership ban would:

"Increase the number of telecommunications services available for consumer choice, including new and varied cable viewing options as additional and independent cable providers are able to enter the marketplace;

"Provide financial incentives to accelerate the deployment of fiber optic technology coast-to-coast; and

"Speed the day when all Americans, in both rural and urban areas, have available to them the benefit of an integrated broadband fiber optic network."

V. LEGISLATION MUST PROMOTE COMPETITION

The Swanson testimony of 1989 framed USTA's message to Congress. Our message in 1989 and today is that we need to modernize our nation's public telecommunications infrastructure.

VI. CONSUMER BENEFITS OF COMPETITION

The need to modernize our infrastructure will go unmet, or will be significantly delayed, unless Congress enacts legislation lifting the cross ownership ban on telcos.

¹In addition to the USTA representatives, telephone Executives from USTA member companies Bell Atlantic and GTE have appeared before the Subcommittee on their own behalf with very similar messages as that outlined in the USTA testimony.

A competitive market for cable television would be but one of the many significant beneficial by-products of such an action.

Mr. Swanson elaborated on the USTA theme in 1990 stating:

"Mr. Chairman, while this committee was guided by what it believed to be the best interest of the consumer and nation in 1984 when it barred provision of cable by local exchange carriers in their service territories, circumstances have changed significantly in the interim.

"Today, it is imperative that telco entry be not only permitted but encouraged. Changes I reference include:

"• After over 30 years of cable monopoly, areas in both rural America and the nation's inner cities still are not served by cable. Failure to introduce a market force to ensure that these areas be given access to cable could result in the nation being divided into a society of information haves and have nots.

"• Technological changes, such as fiber optics and digital switches, make possible and economical, services that heretofore were not thought of, including an integrated ubiquitous switched broadband network.

"• Our competitors in the global market, including those in Asia and a united Europe are expending billions in government funds to build their own fiber optic telecommunications networks and to develop the technology to support those networks.

"USTA believes the freedom to compete in not only the delivery but also the packaging and programming of video entertainment as provided by S. 2800 is an important response to each of these challenges."

VII. RURAL EXPERIENCE STRONGEST TESTIMONY

Today over 200 telephone companies provide cable in over 500 communities under the Cable Act's rural exemption. As of 1992 telcos have provided literally thousands of service years of cable service under the rural exemptions. Further, these are systems operating on the smallest margins of profits. Yet, there has never been a single documented case of a cross subsidy in any of these telco-cable systems.

In her testimony before the House Telecommunications and Finance Subcommittee, Lorinda Ackley, herself a telco cable operator testified:

"* * I believe Taconic's experience and that of over 200 other telcos in providing cable to over 500 communities during the past decade should speak louder than any other testimony. * * * Not only can telcos provide cable for the benefit of the consumer, we are doing so today. But we are hamstrung in this effort as only a small portion of the industry is able to compete."

VIII. RURAL EXEMPTION INCREASE ALONE IS NOT SUFFICIENT

While USTA appreciates the Senate's actions increasing the rural exemption to 10,000, if that is all Congress does to address telco cable, the consumers in America's inner cities and suburbs will continue to be denied choice in cable and the promise of a broadband network.

As Ms. Ackley explained to the House:

"We entered the (cable) field because we wanted to ensure that our customers, our employees, and our families would have the same access to information services, educational opportunities, and health care as the rest of Americans.

"But the rural exemption alone will no longer provide this assurance. Rural telcos do not possess the buying power necessary to demand of manufacturers the development needed to make a switched video and voice broadband network economic. While H.R. 2546 (House companion of S. 1200) will assist by increasing the rural exemption to 10,000, it will most clearly benefit this nation's consumers by freeing the whole telephone industry. * * *

IX. TELCOS ARE NOT IMMUNE TO COMPETITION

The 1990 testimony of Richard Hunt demonstrated that telcos are not immune to competition. An unsuccessful cable competitor in Blair, Nebraska, Mr. Hunt delivered two messages to the subcommittee.

"First, in the telecommunications arena, competition is superior to regulation in promoting consumer benefits and technological advancements. Further, telephone companies are logical competitors for cable operators. * * *

"My second message is that despite the claims of our detractors, the competitive market place is not weighted in favor of telcos. There have been, and will be times, in which despite our best efforts, telephone companies will lose. *But while one industry might be unsuccessful in a given locale, the real winners will always be the American consumer and the competitive posture of America in the global market.*" [emphasis added]

Mr. Hunt demonstrated that in Blair, Nebraska, competition worked to the benefit of the consumer. He explained the incumbent cable operator, responding to their competitive threat, "withdrew their application for a rate increase, added channels, and ultimately greatly reduced their rates."

X. COMPETITION IS NOT LIMITED TO PROVISION OF CABLE

Competition is not limited to the provision of telco cable, but with the advent of PCN technologies, cable is poised to become a competitive threat to local exchange service. In testimony I presented before this committee in 1991 I hope I made it clear to the members of the subcommittee that while rules and regulations are in place to ensure that no cross subsidy from telephone customers could be used to underwrite telcos entry into cable, there are no rules to protect cable consumers from underwriting cable's entry into telephony.

"Deregulated, and with no legitimate competition, that cable industry has spent a good deal of their customers' money executing every possible legal, regulatory, and legislative maneuver to keep telephone companies from entering into or even experimenting in the provision of cable services. * * *

"Moreover, the cable industry is aggressively spending dollars collected from cable rate increases on an experiment of its own, personal communications networks or PCN * * *

"It is curious that the cable industry is moving into the telephone business at the same time they are fighting to keep us out of the cable business. *We would like to see that the rules are the same for everyone.*" [emphasis added]

How quickly cable has moved into telephony today cable has been somewhat surprising. today, cable operators have received over 30 licenses to provide PCN, the equivalent of an extension of local telephone service. I repeat for the subcommittee consideration:

"If telephone companies need a waiver from the FCC to provide a video service, as is the case in Cerritos, why then does Time Warner not need a waiver to provide PCN telephone services in Cincinnati [area in which time earner is cable operator]? * * *

"Should Congress undertake the extraordinary task of reregulating cable, but take no precautions to control its entry into what could be cable's next monopoly, its next consumer feeding ground, personal communications networks?"

Further, the cable industry's efforts to move into telephony are not limited to new technologies such as PCN. Several cable companies have acquired significant interests in "bypass" companies which compete with local telephone companies. In just this past month, TCI, the largest of the cable giants, purchased 49 percent of a bypass company in New York City.

Cable company competition in the form of bypass only serves to enhance private telecommunications networks benefiting high end consumers. Permitting telcos to provide cable within their telephone service area would enhance the public switched network, a benefit to all consumers.

XI. CONCLUSION

USTA in 1989 stated, "Federal restraints on telephone companies frustrate and delay our building the telecommunications networks of the future." Our position has not changed.

As Dean Swanson in 1989 explained, "The information age will not truly arrive until broadband services can be offered to all citizens of this nation." USTA repeats the request we have made in each of the last four years, "We only ask that we be allowed to compete, so we can continue to meet the telecommunications needs of our customers."

APPENDIX 1

CABLE INDUSTRY USE OF FIBER OPTICS

MSO	System Location	Subscribers Served By System	MSO	System Location	Subscribers Served By System
Adelphia	Niagara Falls, NY	23,851	Cablevision Systems	Slidell, LA	16,425
	West Palm Beach, FL	14,968		St. Landry, LA	15,421
	North Adams, MA	13,300		Long Island, NY	3,000
	South Dade County, FL	48,570		Rockford Park, IL	55,200
	Buffalo, NY	136,224		Hammondsport, NY	10,542
	Pittsburgh	102,507		Cresskill, NJ	43,200
	Bethel Park, PA	10,677		Bronx/Brooklyn, NY	3,000
	Dunkirk, NY	5,771	Century	Los Angeles, CA	105,113
	Dunmore, PA	n/a		Brea, CA	13,350
	W. Reserve, OH	n/a	Comcast	West Palm Beach, FL	56,800
	Decatur, MI	2,814		Tallahassee, FL	137,400
	Punxsatawney, PA	4,679		Baltimore County, MD	130,366
	Larrobe, PA	8,942		Philadelphia, PA	15,000
	Indiana, PA	8,869		Fl. Wayne, IN	49,700
	Charlottesville, VA	24,398		Laurel, MS	8,792
	Coudersport, PA	1,078		Danbury, CT	30,000
	Front Royal, VA	6,195		Harford County, MD	25,000
	Winchester, VA	16,471		Little Rock, AR	48,210
	Elizabeth City, NC	6,736		Flint, MI	71,183
ATC	North Adams, MA	13,129		Meridian MS	13,800
	Fredericktown, OH	2,558		Mobile, AL	47,608
	Mt. Oliver, PA	1,166		Charleston, SC	71,000
	Rochester, PA	7,673		New Haven, CT	67,930
	Oahu, HI	240,000	Continental	Proton, CT	27,300
	Kansas City, MO	140,000		Danbury, CT	30,064
	Orlando, FL	298,000		Springfield, MA	39,294
	Manhattan, NY	141,000		Newton, MA	29,332
	Hillaborough, FL	89,666		Los Angeles, CA	7,000
	Indianapolis, IN	75,700		Wilmington, MA	32,288
	Woodside, NY	43,526		Westfield, MA	44,673
	Rochester, NY	155,859		Pompano Beach, FL	135,000
	St. Petersburg, FL	93,000		Woburn, MA	32,288
	Memphis, TN	147,621		Lawrence, MA	28,794
	Shreveport, LA	58,000		Saugus, MA	8,183
	Jackson, MS	63,000		Dearborn Heights, MI	38,955
	Birmingham, AL	74,500		Westland, MI	n/a
	Reading, PA	62,000		Lansing, MI	59,500
	Portland, ME	55,500		Oak Park, MI	n/a
	Queens, NY	86,446		Southfield, MI	45,613
	Albany, NY	63,000		West Bloomfield, MI	n/a
	Savannah, GA	54,599		Elyria, OH	14,300
	Raleigh-Durham, NC	65,632		Bay/Avon, OH	n/a
	Tampa, FL	26,500		Galion/Crestline, OH	7,243
	Appleton, WI	26,500		Belleue, OH	7,615
	San Diego, CA	151,304		Nonwalk, OH	6,647
Cablevision Industries	W. San Fernando Valley, CA	72,155		Findlay, OH	15,947
	Alden, NY	28,400		Springfield, OH	26,099
	Avon, NY	n/a		Fairborn, OH	17,300
	Medina, NY	n/a		South Dayton (Kettering), OH	64,431
	Walden, NY	44,650		North Dayton (Englewood), OH	35,947
	New Paltz, NY	n/a		Xenia, OH	9,600
	Batavia, NY	n/a		Chicago Suburbs	187,218
	Perry, NY	n/a		St. Paul, MN	566
	Covington, NY	n/a	Cox	San Diego, CA	298,297
	Gaines, NY	n/a		Hampton, VA	163,000
	Washingtonville, NY	n/a		Ocala, FL	25,181
	Albion, NY	n/a		Warner Robins, GA	61,000
	Golden Gate, FL	6,907		Gainesville, FL	41,399
	New Smyrna Beach, FL	9,087		Cranston, RI	26,916
	Evans, FL	n/a		Spokane, WA	61,518
	Apollo Beach, FL	11,128		Oklahoma City, OK	75,222
	Sayre, PA	8,200		Omaha, NE	74,388
	Clarksburg, WV	288		Cedar Rapids, IA	38,782
	Cary, NC	18,435		Parma, OH	58,000
	Garner, NC	10,300		Myrtle Beach, SC	20,289
	Wilson, NC	12,890		Moline, IL	55,597
	Carboro, NC	3,927		Roanoke, VA	48,750
	Columbia, SC	57,000			
	Daleville, AL	10,650			
	St. Charles Parish, LA	9,346			

MSO	System Location	Subscribers Served By System	MSO	System Location	Subscribers Served By System
Cox (cont.)	Saginaw, MI	30,574	Prime	Anchorage, AK	46,822
	Hartford, CT	145,346	Sammons	Ft. Worth, TX	81,949
	Jefferson Parish, LA	112,036		Dover, NJ	82,766
	New Orleans, LA	557,364		Glendale, CA	63,647
	Pensacola, FL	64,457		Whittier, CA	11,447
	Bakersfield, CA	22,600		Bensalem, PA	37,640
	Eureka, CA	30,661		Elizabethton, TN	6,390
	Lubbock, TX	35,813		Turlock, CA	14,146
	Santa Barbara, CA	60,300		Waterbury, CT	44,000
				Lanett, AL	9,887
				Easton, PA	28,000
Falcon	Cedartown, GA	4,565	Storer	Louisville, KY	167,691
	Malibu, CA	7,988		Burlington, NJ	30,000
	Astoria, OR	16,293		Montgomery, AL	48,000
	Florence, OR	3,512		Dade/Broward, FL	89,865
	Coos Bay, OR	10,792		Little Rock, AR	48,210
	Wilkesboro, NC	7,662	TCI	Dallas, TX	104,000
	Holly Ridge, NC	2,435		Corvallis, OR	22,700
	Shawnee, OK	5,749		Washington, DC	34,612
	Centerville, MD	2,296		Millbrae, CA	3,990
	Dalton, GA	14,675		Columbus, GA	11,964
	Scottsboro, AL	5,263		Galveston, TX	16,535
	Gilroy, CA	22,657		Daytona Beach, FL	32,483
	Lincoln City, OR	4,800		Mt. Prospect, IL	61,000
	Burke County, NC	n/a		Poughkeepsie, NY	16,900
Jones	Dalles, OR	8,018		Kent-Ravenna, OH	7,113
	Tillamook, OR	2,491		Niles-Warren, OH	38,419
	Benton, AR	3,654		Cheyenne, WY	20,507
				Quaillo, PR	28,000
	Broward County, FL	36,500		Fremont, CA	26,923
	Augusta, GA	53,800		Reno, NV	37,000
	Turnersville, NJ	23,063		Athens, GA	20,247
	Palmdale, CA	44,500		Farmington, NM	15,000
	Elgin, IL	14,151		Chicago, IL	22,646
	Naperville, IL	11,805		Youngstown, OH	20,657
	Anne Arundel County, MD	71,360		Dallas, TX	104,000
	Hilo, HI	12,930		Exeter, NH	11,827
	Ft. Myers, FL	38,000		Baltimore, MD	45,000
	Aurora, IL	24,325		E. San Fernando Valley, CA	39,000
	Jefferson County, CO	15,353		Santa Cruz, CA	38,220
	Lancaster, NY	12,010		Annapolis, MD	16,000
	Yorba Linda, CA	14,000		Van Nuys, CA	39,000
	Lake Zurich, IL	8,850		Sunnyvale, CA	19,550
	Wheaton, IL	31,900		Seattle, WA	180,413
KBLCOM	Independence, MO	68,735		Caugus, PR	n/a
	Lodi, OH	7,024		Cape Cod, MA	42,013
	Tampa, FL	50,500		Montgomery, AL	48,000
	Matteson, IL	16,342		Valdosta, GA	16,613
	Roseville, CA	11,200	Telecable	Spartansburg, SC	30,806
Newhouse	San Antonio, TX	250,000		Auburn, AL	11,983
	Minneapolis, MN	103,622		Greenville, SC	49,744
	Orange County, CA	83,000		Beckley, WV	20,045
	Portland, OR			Springfield, MO	41,500
				Piano/Richardson, TX	43,000
Newhouse	Syracuse, NY	71,500		Overland Park, KS	72,000
	Bergen County, NJ	40,205		Arlington, TX	50,010
	Prince Georges Cnty, MD	44,921		Columbus, GA	26,916
	Livonia, MI	23,489		Lexington, KY	66,786
	Redford, MI	11,275	Times Mirror	San Diego County, CA	108,222
	Lincoln, NE	64,084		Palos Verdes, CA	20,747
	Potsdam, NY	7,896		Texarkana, TX	21,148
	Wetumpkin, AL	10,000		Ashland, KY	17,361
	Anniston, AL	31,480		Meriden, CT	33,400
	Troy, NY	48,135		Phoenix, AZ	141,041
	Rome, NY	17,315		RI	n/a
	Carthage, NY	8,459		Orange County, CA	115,000
	Singhampson, NY	59,780		Lafayette, IN	37,650
	Corning, NY	12,420		Springfield, IL	47,200
	Carrollburg, PA	14,020		Chillicothe, OH	15,500
	Coriopolis, PA	13,675		Washington Courthouse, OH	6,462
	Fulton, NY	6,936		Bullhead City, AZ	10,200
	Battenkill, NY	3,645		Palmer, MA	10,400
	Coppers Cove, TX	n/a		Casa Grande, AZ	2,790
	Waco, TX	41,100		Williamsport, PA	24,862
	McGregor, TX	n/a			
	Douglas County, NE	14,796			
	Southwest Cook County, IL	n/a			
	Oakland County, MI	n/a			
	St. John's Parish, LA	n/a			
	Green Township, OH	n/a			

MSO	System Location	Subscribers Served By System	MSO	System Location	Subscribers Served By System
Viacom	Cleveland, OH	10,000			
	Seattle, WA	214,000			
	San Francisco, CA	131,200			
	Pittsburgh, PA	35,000			
	Castro Valley, CA	61,800			
	Everett, WA	247,758			
	Redmond, WA	n/a			
Vision	Wilmington, NC	39,617			
	Mecklenburg County, NC	36,500			
	Kannapolis, NC	27,500			
	Ablensville, NC	9,543			
	Salisbury, NC	12,278			
	Jacksonville, NC	16,437			
	Morehead City, NC	24,300			
	Pinellas County, FL	130,312			
Warner	Alexandria, LA	28,105			
	Columbus, OH	19,700			
	Milwaukee, WI	85,392			
	Brooklyn/Queens, NY	102,600			
	Oshkosh, WI	12,358			
	Chambersburg, PA	12,920			
	Rochelle, IL	3,101			
	Barstow, CA	9,443			
	Boston, MA	114,000			
	Western, OH	n/a			
	DeKalb, IL	11,299			
	Shippensburg, PA	4,547			
	Altoona, PA	32,632			

[The Learning Channel, March 1992; the Discovery Channel Magazine, March 1992; Cable in the Classroom, March 1992; Economic Strategy Institute Special Report, "The Impact of Broadband Communications on the U.S. Economy and on Competitiveness; "Building the Information Marketplace," by Michael L. Dertouzos, Technology Review; and "Communications, Computers and Networks," by Michael L. Dertouzos, Scientific American, may be found in the committee files.]

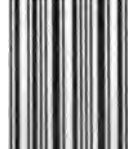
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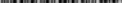
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